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# EXPERIENCE WITH GASTRECTOMY AT A VETERANS HOSPITAL

George L. Jordan Jr., M.D., B. F. Bolton, M.D.
and
Michael E. De Bakey, M.D., Houston, Texas

• *The late results of gastrectomy were studied in 215 veterans of the armed forces from one to five years after the operation. The results were strongly influenced by the nature of the lesions that had necessitated the operation. In all of the 26 patients who had had gastric ulcer, the results of gastrectomy were good to excellent. In the 141 patients whose ulcers had been duodenal, the results were poor in 22.*

*The symptoms leading to operation for duodenal ulcer were found to have some prognostic significance. The best results were obtained in 46 patients treated for intractable pain and the poorest in 42 patients treated for either massive or chronic recurring hemorrhage.*

*The data permitted analysis for other factors as well. In particular, it was found that the results of surgery were equally good in the veteran and the nonveteran patient, and there was no evidence that financial compensation had any significant influence on the results of surgery for these benign lesions.*

The late results of gastrectomy in the treatment of benign gastroduodenal ulceration have been tabulated by a number of authors,[1] but none of these reports has considered the veteran of the armed forces as a specific problem. Duodenal ulcer is a relatively common lesion among military personnel, particularly those stationed overseas. Thus, many veterans who suffer from this disease have a service-connected disability. Since compensation is an important consideration in the medical treatment of all veterans, there has been considerable speculation concerning the effect of compensation upon the results of treatment in various diseases. This study was undertaken to evaluate the absolute results of gastrectomy at the Veterans Administration hospital in Houston, Texas, and also to attempt to ascertain the role of compensation in the end-results.

## Materials and Method

This study included all patients who underwent gastrectomy for treatment of benign gastroduodenal ulceration in the Veterans Administration hospital in Houston between April 1, 1949, and May 1, 1953. Of the 215 patients, 176 had complications of duodenal ulcer, 30 had gastric ulcers, and 9 had marginal ulcers after operation elsewhere. Since the operative indications for duodenal ulcer may have a definite bearing upon the end-result, these will be discussed briefly. Massive hemorrhage or several episodes of minor hemorrhage were considered definite indications for operation, as was cicatricial pyloric stenosis. After Jan. 1, 1952, gastrectomy was the treatment of choice for perforated ulcer. A conservative attitude has been adopted toward intractable ulcers when pain is the sole symptom. Almost all patients operated on with this indication had had symptoms for more than four years, and a definite effort was made to separate the patients with intractable ulcers from the "intractable patients." Four (1.9%) of the 215 patients in this series did not survive gastrectomy. The operative fatality rate for the patients with duodenal ulcer was 2.3%, all deaths occurring in those treated for massive hemorrhage. There were no deaths among patients treated for gastric or marginal ulcer.

An attempt was made to examine thoroughly all surviving patients. One hundred eighty-four (87%) of the 211 patients who survived operation were followed up for from one to five years (table 1). All but one of the 177 patients known to be living at the time of this study returned to the hospital for examination; in this patient the result was evaluated by questionnaire. Patients were questioned in detail concerning postgastrectomy symptoms, recurrence of ulcer symptoms, gastrointestinal bleeding, eating habits, bowel habits, weight change, smoking, alcohol intake, general ac-

TABLE. 1.—*Distribution of Patients Undergoing Gastrectomy Followed Up from One to Five Years*

| Indication for Operation | Patients, No. | Survivals, No. | Patients Followed Up | |
|---|---|---|---|---|
| | | | No. | % |
| Duodenal ulcer | 176 | 172 | 149 | 87 |
| Gastric ulcer | 30 | 30 | 27 | 90 |
| Marginal ulcer | 9 | 9 | 8 | 89 |
| Total | 215 | 211 | 184 | 87 |

From the Cora and Webb Mading Department of Surgery, Baylor University College of Medicine, and the Surgical Service, Veterans Administration Hospital.

tivity, and type of work. A physical examination was performed, and, if the history or physical examination suggested any abnormality, appropriate laboratory and roentgenographic diagnostic examinations were performed. All were asked to give their evaluation of the result. In addition, they were questioned concerning the actual amount of compensation or pension received and the disability for which it was awarded. Because many could not answer these questions, the official records of financial recompense were obtained for each patient, and the part of this report dealing with that subject is based upon these records.

## Definition of Terms

*Postgastrectomy Syndrome.*—The postgastrectomy syndrome includes all postprandial symptoms that cannot be definitely attributed to a specific pathological entity such as marginal ulcer or intestinal obstruction. Most patients with this syndrome complained of weakness, sweating, nausea, vomiting, and palpitation or some combination of these manifestations (dumping syndrome). Symptoms were classified as mild if they occurred only after the patient's eating of specific foods that could easily be eliminated from the diet without impairment of nutrition or if they occurred only after ingestion of a large meal. Such symptoms were usually elicited only after detailed questioning and were of no concern to the physician or patient, as they were easily controlled. Symptoms were deemed to be moderate if they occurred once or twice weekly despite elimination of known offending agents. If symptoms occurred after almost every meal and were sufficiently incapacitating to interfere with normal activity, they were classed as severe.

*Rating of Results.*—Patients were questioned specifically concerning their opinion of their postoperative gastric condition as compared with their preoperative status. Results were classified as "excellent" if the patient was enthusiastic about the operative result and was satisfied with his progress and as "improved" if he was significantly better but not completely free of symptoms. The remainder of the patients were grouped in categories labeled "no change" or "worse." Results were also rated by the examining physician as "excellent," "good," or "poor," based on his examination and the patient's symptoms, nutrition, and ability to carry on normal activities. The rating was poor if a marginal ulcer developed, if the patient had postgastrectomy symptoms severe enough to interfere with his normal activity, or if he was unable to maintain his weight at a level consistent with good health.

## Results

*Duodenal Ulcer.*—Six of the 149 patients with duodenal ulcer who were followed up died in the late postoperative period (table 1). One died from a perforated marginal ulcer that was diagnosed only at autopsy. Three died of unrelated causes, and the causes of death of the other two patients are unknown. Development of extra-abdominal diseases that produced gastric symptoms precluded accurate evaluation in two additional patients; prior to this study, the result in one of these had been classified as excellent for three years postoperatively.

Sixty-five (46%) of the remaining 141 patients who were traced had postgastrectomy symptoms (table 2). However, only 15% had moderate or severe symptoms, and several of the patients with moderate symptoms were not incapacitated enough to desire diagnostic or

TABLE 2.—*Postgastrectomy Symptoms in 175 Patients*

| Indication for Operation | Total Patients Treated, No. | Postgastrectomy Symptoms | | | Total | |
|---|---|---|---|---|---|---|
| | | Mild | Moderate | Severe | No. | % |
| Duodenal ulcer | 141 | 43 | 17 | 5 | 65 | 46 |
| Gastric ulcer | 26 | 7 | 1 | 0 | 8 | 31 |
| Marginal ulcer | 8 | 4 | 0 | 1 | 5 | 63 |
| Total | 175 | 54 | 18 | 6 | 78 | 45 |

therapeutic procedures. Seventy-two (52%) of these patients were able to eat three meals a day. Many continued to eat meals more frequently because they preferred to rather than because their food intake was limited. One hundred eleven (79%) considered their total daily food intake to be within normal limits, and 102 (72%) had maintained or gained weight. Among those who had lost weight, some had deliberately lost the excess weight that had resulted from the preoperative high-caloric intake and others had lost only a minimal amount, so that in only 15 (11%) was loss of weight actually associated with difficulty in ingesting a satisfactory diet. In no patient was loss of weight the only reason for classifying the result as poor, for all who had lost significant weight had additional symptoms.

Of the 141 patients in this group, 117 (83%) continued to use tobacco and 48 (34%) continued to drink alcoholic beverages. The proportion of patients who smoked and drank was no greater among the group with poor results than among those with good or excellent results. However, all patients in whom marginal ulcers developed continued to smoke, and all except one continued to drink. In this group of 141 patients, 109 (77%) are working and 112 (79%) consider their activity to be as good as or better than it was preoperatively, although not necessarily normal. Some patients' activities were restricted because of disabilities unrelated to the ulcer or the operation.

The condition was evaluated by the patient to be excellent in 38%, improved in 47%, unchanged in 13%, and worse in 2%. The classification by the examining physicians placed a higher percentage in the excellent group but also classified one more as having a poor result (table 3). Eighty-four per cent were significantly improved. Eight of the 22 patients with poor results had the dumping syndrome with associated loss of weight, two had chronic afferent loop obstruction, and three had a variety of nonspecific gastrointestinal complaints that, after thorough evaluation, were considered to be psychogenic. Three patients had symptoms suggestive of a marginal ulcer, but roentgenography revealed no abnormalities, and no objective signs, such as bleeding, have occurred to permit a definite diagnosis. In the remaining six patients, proved marginal ulcers developed; three of these patients were subsequently treated by vagotomy and re-resection, and in two of them results were excellent

at the time of writing, two years later, while the third patient underwent operation too recently for evaluation. One patient was treated with vagotomy alone, after which proved marginal ulcers developed, but his condition has been satisfactory for the 12 months prior to writing. In one patient treated by diet, antacids, and psychiatric measures, the result has been good. The remaining patient, who has severe alcoholism, refused any type of treatment and continues to have difficulty because of marginal ulcers. It has also been possible to relieve five additional patients of their symptoms, two by subsequent surgical procedures and three by conservative measures. Consequently, by utilization of a conservative regimen or additional surgical measures, 92% may now be classified as having good or excellent results.

*Gastric Ulcer.*—One of the 27 patients with gastric ulcer who were followed up died of pneumonia two and one-half years after gastrectomy (table 1). Of the remaining 26 patients, 8 (31%) experienced postgastrectomy symptoms, all of which were mild or moderate (table 2). Sixty-nine per cent were eating three regular meals a day, 89% maintained or gained weight, and in none was loss of weight significant. Eighty-one per cent were smoking, and 35% continued to drink varying amounts of alcohol. Sixty-five per cent are working, and 69% consider their activity to be as great as or greater than preoperatively. Since the average age of this group is considerably higher than that of patients with duodenal ulcer, a greater number have additional diseases. Seventeen patients (65%) considered the results excellent, and nine (35%) considered themselves improved. Our evaluations coincided exactly with those of the patients (table 3). There were no poor results.

*Marginal Ulcer.*—One patient of the nine with marginal ulcer could not be traced; the rest are living. Postgastrectomy symptoms were experienced by five of this group (table 2), but in only one was this significant. Only two are able to eat three normal meals daily, but five have gained or maintained weight and in only one instance has weight loss been severe. All but one of the patients continue to smoke, and three continue to drink. Seven of the eight patients are working, and six of them consider their activity as great as or greater than preoperatively. According to the patients' as well as our own evaluations, conditions were excellent in two, improved in five, and unchanged in one (table 2). In the one patient in whom the result was poor due to severe postgastrectomy symptoms, revision of anastomosis has resulted in freedom from symptoms during the 12 months prior to the time of writing. Consequently, all results in this group may be considered good or excellent.

TABLE. 3.—*Results of Gastrectomy in 175 Patients*

| | Result | | | | | | |
|---|---|---|---|---|---|---|---|
| | Excellent | | Good | | Poor | | |
| Indication for Operation | No. | % | No. | % | No. | % | Total |
| Duodenal ulcer | 64 | 45 | 55 | 39 | 22 | 16 | 141 |
| Gastric ulcer | 17 | 65 | 9 | 35 | 0 | 0 | 26 |
| Marginal ulcer | 2 | 25 | 5 | 63 | 1 | 12 | 8 |
| Total | 83 | 47 | 69 | 39 | 23 | 14 | 175 |

In addition to the specific factors peculiar to gastrectomy already discussed, certain other complications were encountered. The two of importance are serum hepatitis and intestinal obstruction. Of 178 patients who received blood transfusions during hospitalization, hepatitis subsequently developed in 5 (3%), but all made a satisfactory recovery. Many patients, particularly those with massive hemorrhage, received several blood transfusions, and consequently the ratio of hepatitis to transfusions is extremely low. In nine patients (5%) intestinal obstruction developed, requiring further hospitalization in the late postoperative period. Two had acute and two chronic obstruction of the afferent loop, and five had classic adhesive obstruction of the small intestine. All were treated satisfactorily by surgical intervention.

### Influence of Compensation or Pension

No decision or recommendation concerning financial compensation was made by the physician treating the patient. For evaluation of pension, a summary of the patient's hospital record was sent to the regional Veterans Administration office. When an application for compensation or pension is submitted, it is acted upon by a board usually composed of a lawyer, designated as a claims-rating specialist; a physician, designated as a medical-rating specialist; and a third member, designated as an occupational-rating specialist. These three members are Veterans Administration employees whose duties are usually limited to the adjudication of veterans' claims.

The terms "compensation" and "pension" are not interchangeable. Compensation applies to financial recompense for service-connected disability. The disability is rated from zero to 100%, the exact amount of compensation being based upon the percentage of disability and the number of dependents. A pension is given for non-service-connected disability and is awarded only to persons considered to be permanently and totally disabled.

Analysis according to the type of ulcer in this series revealed no statistically significant difference; consequently, the total figures for those patients with duodenal, gastric, and marginal ulcers will be presented. There were 108 living patients with non-service-connected and 67 with service-connected disabilities. No patient's pension or compensation was reduced after operation. Of the 108 patients with non-service-connected disabilities, 39 did not receive a pension preoperatively or postoperatively. Of these, 95% considered their condition to be improved or excellent and 5% thought there was no change. Twenty-two patients had been receiving compensation for other disabilities preoperatively and were given no increase after operation; 17 were receiving maximum possible benefits prior to operation. Of the 30 (28%) patients given a pension after gastrectomy, 25 (83%) considered their conditions to be improved or excellent. Of the 67 patients with service-connected disabilities, only 2 received no pension at any time. In one of these the rating was excellent, and in the other it was improved. Five received

no increase, and three were receiving maximum benefits at the time of operation. Excluding the last three patients, 89% of the patients with service-connected disabilities received an increase in pension after gastrectomy.

Of particular interest is the number of patients who considered their condition improved as compared with their preoperative status. A pension was granted to 25% of the patients with non-service-connected disabilities in this category, 80% of whom were working (32% regularly and 48% part time). In the group with service-connected disabilities, 85% received an increase in pension and a similar percentage were working (67% regularly and 17% part time).

## Comment

When this study was undertaken, the question was raised concerning the possibility that the patients might accentuate their postoperative symptoms in order to increase their compensation. The results of this study do not support this opinion. In fact, there were only two patients in the entire series who were believed to have misrepresented the severity of their symptoms. This conclusion is also borne out by the fact that these results in veteran patients closely parallel those reported in patients presumably drawn from the general population.[1]

The results of the treatment of gastric ulcer were gratifying. We are of the opinion that subtotal gastric resection is the treatment of choice for gastric ulcer, but we are content with less extensive resection than that used for duodenal ulcer. The Billroth 1 and various modifications of the Billroth 2 procedures were used in this study. There was no significant difference in results obtained by the various types of anastomoses used.

The results obtained in patients with duodenal ulcer were analyzed from the standpoint of the complication for which operation was performed. Of the 23 patients treated for perforation, results were good or excellent in 83%. Of the 42 patients who were treated for either acute massive hemorrhage (14 patients) or for chronic recurring hemorrhage (28 patients), results were good or excellent in 79%. Good results were obtained in 83% of 30 patients treated for obstruction and in 91% of 46 patients treated for intractability. The poorest results were obtained in the 28 patients treated for chronic recurring bleeding, as results were good in only 72% of these. The fact that the highest percentage of good results was in those patients treated for intractable pain is a reflection of the selection of patients.

The results obtained in patients with duodenal ulcer were also analyzed according to the length of time that had elapsed since operation. There was no statistically significant difference in the percentage of poor results in patients followed up for more than three years and in those who had been followed up for a shorter period of time. This is a reflection of the fact that in this group of patients most of the postoperative difficulties leading to the classification of the result as poor occurred relatively early in the postoperative period. Thus, in 20 of the 22 patients so classified, the difficulty developed within one year, and in the remaining 2 it developed in less than two years after operation. Whereas no result classified as good at the end of two years subsequently had to be classified as poor, several of the patients in whom the result was classified as poor early in the postoperative course were relieved of their symptoms by additional surgical procedures or a medical regimen, so that, at the time this study was undertaken, results in 94% of the patients followed up for more than three years could be classified as satisfactory. Consequently, in such cases gastrectomy may not be the final therapeutic procedure but must be considered an adjunct in the over-all management of the patient. If this attitude is taken, the proper application of a combination of therapeutic procedures will result, with the passage of time, in an increasing number of asymptomatic patients rather than an increasing percentage of poor results.

The incidence of marginal ulcer was 4.8% in the group of patients treated for duodenal ulcer. This incidence is somewhat higher than that reported by some observers.[1c] Fortunately, however, these were controlled satisfactorily except in two patients, one of whom refused further therapy. The diagnosis was made only at autopsy in the other patient. The number of marginal ulcers treated, including those developing postoperatively here and elsewhere, is small in comparison with that in recently reported series.[2] However, our results from re-resection alone or combined with vagotomy have been good. Only a few patients have been treated by vagotomy alone, but the results obtained were not as good.

## Summary

A study was made of the results of gastrectomy in 215 armed forces veterans, 87% of whom were followed up for from one to five years. Results were listed according to the indication for gastrectomy. Of the 141 patients with duodenal ulcer, results were excellent or good in 119 and poor in 22. In all 26 patients with gastric ulcer, results were excellent or good. The result was poor in only one of the eight patients with marginal ulcer. Thus, results were excellent or good in 152 (87%) of the 175 living patients who were followed up. This study suggests that the results of treatment of duodenal and gastric ulcers by subtotal gastrectomy in the veteran patient are equally as good as those obtained in the nonveteran patient, and financial compensation does not significantly influence the results of the treatment of benign lesions by gastrectomy.

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# RELATIONSHIP OF SIGNIFICANCE OF WOUND TO PAIN EXPERIENCED

Henry K. Beecher, M.D., Boston

• *The frequency of pain severe enough to require a narcotic was studied in 150 male civilian patients and contrasted with similar data from a study of wartime casualties. Efforts were made to have the two groups comparable in essential respects and to make sure that existing differences, such as age and past illness, between the two groups did not influence the results. The group of soldiers had very extensive wounds, were clear mentally, and were not in shock; many had had no morphine at all, yet less than one-fourth said, on being questioned, that they had enough pain to want anything done about it. The percentages of patients desiring narcotics were 32 and 83 for the military and the civilian groups respectively.*

*There was no dependable relation between the extent of a pathological wound and the pain experienced. No significant difference was found between the pain of sudden injury and that of chronic illness. The intensity of suffering is largely determined by what the pain means to the patient. This emphasizes the impossibility of appraising, by current experimental techniques at least, the power of analgesic agents in man. It also means that the indiscriminate administration of powerful analgesics to all injured individuals is unsound.*

Probably everyone who is accustomed to working with pain of pathological origin has been puzzled by the lack of any obvious correlation of extent of wound with pain reported by the patient. Certainly the degree and duration of pain from any given wound is essentially unpredictable. This was nicely put more than a hundred years ago. On writing of gunshot wounds in the Peninsular War, Guthrie [1] said, "in two persons suffering apparently from the same kind of injury, and with the same detriment, one will writhe with agony, whilst the other will smile with contempt." Also, Dupuytren [2] was quoted in 1836 as saying:

> What a difference there is in the morale of those we treat in civil hospitals and those hit by murderous fire on the field of battle! The military man is accustomed to forgetfulness of self and familiar with the prospect of mutilation. He considers himself happy if he saves his life yet loses an extremity. And, as long as he is assured of security, . . . he faces with courage, even joy, the scalpel of the surgeon. But look at the unfortunate laborer, the farmer, or the artisan, whose work is the only resource of a large family. He is obsessed by fear; misery awaits him. His is a profound sorrow, a dark hopelessness. He accedes only with regret to the insistence of the surgeon. One should not be surprised by the difference in results!

Until recently it had seemed impossible to bring any order into this apparent chaos.

During the compiling of evidence to test the hypothesis that suffering consists of two principal factors, the initial sensation and the reaction to sensation, a possible clarifying situation emerged. It should be mentioned that the hypothesis referred to is more than 60 years old. It goes back to Marshall [3] and to Strong.[4] Factual evidence in support of the interesting speculations of Marshall and Strong has been obtained in the anesthesia laboratory at Massachusetts General Hospital and has recently been summarized.[5] When this evidence is examined as a whole, it carries strong indication that the reaction phase or processing phase is very often of more importance in suffering than is the original sensation. The data to be presented here are in line with this view.

The hypothesis mentioned has been tested as follows: A number of years ago I had an opportunity to study a large group of men recently wounded in battle.[6] Data on these men were collected chiefly on the Anzio Beachhead, where the men studied had been subjected to almost uninterrupted shell fire for weeks. Notable in this group of wounded soldiers was their optimistic, even cheerful, state of mind. It is important to remember that these men were interviewed in a forward area very shortly after having been brought from the battlefield to the field hospital, from an area of desperate anxiety to an area of relative safety. They thought the war was over for them and that they would soon be well enough to be sent home. It is not difficult to understand their relief on being delivered from this area of danger. The battlefield wound marked the end of disaster for them, or so they thought.

The present study was set up to contrast those data with the incidence of pain severe enough to require a narcotic in a series of civilians subjected to surgery. The civilian's surgical operation is viewed as a depressing, calamitous event by most people. Here, then, are two groups of individuals, each with severe tissue trauma. In the one case, there was sudden relief from almost overwhelming anxiety, and the injury was viewed as good fortune; in the other case, the injury was viewed as disaster and was fraught with anxiety. The comparison of interest is the frequency of pain reported in the two situations. The tissue trauma inflicted by the surgeon is, for the categories studied (intrathoracic, intra-abdominal, and bone surgery), far less than that of wounds in the same regions inflicted by high explosive shell fragments (see table); yet, as shown, the pain arising from the surgeon's wounds was far greater than it was from the war wounds. The crucial difference appears to lie in the significance of the two wounds and in the reaction of the patients to each.

## Method and Data

To get at the question of pain in the earlier study, the wounded man was asked several carefully phrased questions, "As you lie there, are you having any pain?" (Care was taken to be sure the patient understood the

From the Anesthesia Laboratory of the Harvard Medical School at the Massachusetts General Hospital.

question.) If the answer was "no," that part of the questioning was dropped. If "yes," further inquiry was made: "Is it slight pain, or moderate pain, or severe pain?" There was usually little hesitation in differentiating. Those who said they were having pain of any degree were asked if the pain was great enough so that they wanted something to relieve it. (Incidentally, it very early became apparent that morphine was an unfortunate word to use, and its use was avoided. To the layman, morphine is a frightening word; the wounded men were alarmed by the implication that they were "bad enough" to need this agent.) Only males were considered in both groups. So much for general procedure.

The striking thing about the war wounds and the men involved was their comparative freedom from pain. Although the soldiers chosen for study all had very extensive wounds, only men who were clear mentally, who were not in shock, and who had had no morphine for at least four hours were chosen for study; many had not had any morphine for seven hours or more, and 36 had not had any at all. Excluding those who had had no morphine, the average time since receiving morphine was 6.4 hours. Only one-quarter of the entire group of men, when questioned 7 to 12 hours after being wounded, said they had enough pain to want anything done about it. (The figure is one-third for the three categories studied here: bone, thoracic, and abdominal wounds.) Their statements were made in response to a direct question, which of course reminded them that analgesic agents were available if they wanted them. These severely wounded men did not have a general block of the pain experience, for they complained in a normal manner at rough handling of their wounds, or at inept venipunctures. The same interrogation procedure as described above was followed in the present study of surgical patients.

*Comparison of the Frequency of Pain Severe Enough to Require a Narcotic in Two Situations, War Wounds and Civilian Surgical Wounds**

| Circumstance | | | Trauma to Bones | Intrathoracic Trauma | Intra-Abdominal Trauma | Total % |
|---|---|---|---|---|---|---|
| War wounds | Pain | none | 19 | 15 | 7 | |
| | | slight | 12 | 18 | 5 | |
| | | moderate | 7 | 11 | 14 | |
| | | severe | 12 | 6 | 24 | |
| | Narcotic wanted | yes | 11 | 10 | 27 | 32 |
| | | no | 39 | 40 | 23 | 68 |
| | No. of patients | | 50 | 50 | 50 | |
| | Age, yr. | | 24.8±0.9 | 24.5±0.8 | 22.7±0.6 | |
| | Time since trauma, hr. | | 12.5±1.3 | 9.8±1.0 | 7.2±0.7 | |
| Civilian surgical wounds | Pain | none | 5 | 5 | 1 | |
| | | slight | 14 | 4 | 8 | |
| | | moderate | 17 | 17 | 21 | |
| | | severe | 14 | 24 | 20 | |
| | Narcotic wanted | yes | 38 | 42 | 45 | 83 |
| | | no | 12 | 8 | 5 | 17 |
| | No. of patients | | 50 | 50 | 50 | |
| | Age, yr. | | 45.5±2.3 | 49.2±2.0 | 52.6±1.9 | |
| | Time since trauma, hr. | | 4.4±0.3 | 3.0±0.3 | 4.3±0.4 | |

* Data based on 300 male patients.

If the extent of tissue trauma had any fixed relationship to the pain experience, there was every reason to suppose that those with war wounds would have more pain, both in frequency and in degree, than those who had the lesser wounds of surgery. As shown here, the opposite was the case (see table). The important difference in the two situations seems to be in the interpretation of the wound. In the one case the war wound marked the end of disaster, the victims thought, and was associated with relatively little pain. In the other case, the surgery, although involving much less trauma, spelled disaster for the patient. It was associated with far more pain than were the war wounds. These data support the view that the reaction or processing component of suffering is at least as important, probably more so, than the original sensation. This is not to deny that wounds and pain often go together; but often they do not, as well. Clearly important factors besides trauma to nerve endings have importance here. It has been suggested that the violence of war wounding happily carries with it analgesia. There is no evidence to support such a view in individuals whose central nervous system is undamaged. Such an occurrence, if it existed, would be fascinating indeed. It seems unlikely that a bone cut by the surgeon's chisel or the femur fractured by the family automobile in a crash is any different physically from the femur fractured by a blow from a shell fragment.

## Comment on Civilian Data

*Age.*—An obvious difference between the two groups shown in the table is age. This appears not to be important as far as the present thesis is concerned: 20 civilians fell in the 17-to-30-year age group, similar to the soldiers; 18 (90%) of these civilians had pain severe enough to want a narcotic. Fifty-seven civilians fell in a second 13-year period, age 50 to 63, and had pain severe enough to want a narcotic in 50 (88%) of the cases.

*Anesthetic Agents and Time of Interview.*—Patients receiving thiopental sodium with nitrous oxide and a muscle relaxant recovered consciousness sooner than those receiving ether and were ready for interview correspondingly earlier. The incidence of those having sufficient pain to want a narcotic is not significantly different in the two groups. The data are as follows: For the patients receiving a muscle relaxant, the interview time averaged 2.9 hours after the completion of the surgery, with 87% having sufficient pain to want a narcotic. For the patients receiving principally ether, the interview time was 4.7 hours after completion of surgery and the percentage wanting a narcotic was 84.

It should be added that 50% of the patients receiving a muscle relaxant had had a narcotic by the time of the interview, whereas 43% of those receiving ether had. Any important difference is questionable. If there is any difference at all, it is doubtless because of the fact that consciousness is recovered earlier when the thiopental muscle-relaxant sequence is used than is the case with ether. Notwithstanding the somewhat greater frequency with which the patients had received a narcotic before the interview in the muscle-relaxant group, 54% of this group of 54 patients, on interview, had pain characterized as severe, 33% had moderate, 7% had slight, and 6% had none. In the ether group, only 31% of a total of 74 patients had pain characterized as severe, 40% had moderate, 20% had slight, and 9% had none. The earlier and possibly more frequent administration of a narcotic to the muscle-relaxant group has not obscured the fact that pain is very frequently present in this group and of a

severe degree, even severer than was true of the ether anesthesia group. The thesis of this study is supported, for the percentages 87 and 84 (see above) of those having pain severe enough to want a narcotic are not different for the two types of anesthesia.

*Duration of the Pathological State.*—It is only fair to point out that the wounded soldiers have had their disability suddenly thrust upon them. It should also be borne in mind that the soldiers' trauma continues during the ambulance haul over the inevitably rough roads of the battle area until he enters the forward hospital. This rough handling is especially serious in the case of fractures of long bones, for splinting is never perfect. As for the other group, one might suppose that the patient subjected to long illness would be more likely to complain of pain and ask for an analgesic agent sooner than one whose surgery was a sudden necessity; however, this did not prove to be the case. Of the patients subjected to operations associated with long illness, 46 in a random sample (gastrectomy, esophagectomy, aortic graft, "cup" arthroplasty to hip, spinal fusion), 87% wanted a narcotic at the interview. Of the patients not subjected to long illness preceding surgery, 20 in a corresponding random sample (fracture of bone, cholecystectomy, appendectomy, lithotomy), 90% wanted a narcotic. Thus, long duration of the disability does not appear to be a factor.

## Pathological Pain Versus Experimental Pain

It may be remarked that the data presented here, confirming as they do the unrelatedness of the extent of a pathological wound and the pain experienced, cast further doubt on the usefulness of experimental pain in man for the purposes to which it has so far usually been put[7] and, conversely, support the use of pain of pathological origin for work in this field. Some discussion of this point is indicated, for the data presented here strongly support the importance of the reaction component of suffering (see above), and this lies at the heart of the controversy on experimental versus pathological pain.

There are many ingenious methods of producing pain for experimental purposes: electric shocks to teeth, pricks of the skin, ischemia of muscles, heat to the forehead, and so on. All of these methods have one thing in common, and that is the assumption that the more nerve endings are traumatized, the more the pain experienced. Scores of such studies have been made, and often these even deal with complex minutiae of the situation.

Examination of the pain arising in injury or disease indicates that this basic assumption of many experimentalists does not hold true. Presumably one of the reasons for studying experimental pain is to learn something about pain of pathological origin, its cause, its mechanism, and its therapy. In view of the findings presented here, it seems that experimental pain in man as employed so far has little to offer in the appraisal of the analgesic power of these agents. There are, clearly, basic differences between pain of experimental origin and pain from pathological sources. This fact has not been given the attention it deserves. The lesser wounds of civilian surgery have more pain associated with them than do the greater wounds of warfare. It is evident that there is also a qualitative difference here (for some wounds are painless). This appears to be determined by the significance of the wound.

There is an abundance of evidence to indicate that experimental pain methods in man do not work as well as has been thought for the appraisal of analgesic agents. Experimental pain in man certainly has other established uses, as, for example, in determining the anatomy of the pain apparatus. The most carefully presented and fully studied experimental pain method is that of Hardy, Wolff, and Goodell.[8] Some 15 groups of investigators have now been unable to confirm many of their observations,[7] particularly as their work relates to analgesic agents. In the second place, experimental pain in man might have wider usefulness if it could be possible to separate it from the reaction phase. The evidence against this having been done (for experimental pain) to date has been summarized elsewhere.[7] This is not intended to imply that it will never be done.

It is important to make the following point clear: What is said relates to man and not to animals. There is much reason to believe that the situation is different in the two species. Unlike the situation with experimental pain in man, in animals the effect of powerful analgesic agents on experimental pain leads in many hands to reproducible results. As pointed out before,[5] presumably all pain is serious and significant to an animal, to the extent that experimental pain never is to man. Thus the reaction of the animal to experimental pain is likely to be the same as for pathological pain; the two are not differentiable to the animal. This makes experimental pain in an animal comparable to pathological pain in man, if reaction to the original sensation is as important as it seems to be in the pain experience.

## General Observations

The data accumulated here indicate something more than the limited usefulness of experimental pain in man; namely, they indicate that some factor other than the extent or degree of wounding is of principal importance in the pain experienced. It has seemed profitable to search for this other factor or factors. From the evidence presented above, it seems reasonable to conclude that reaction to the original pain sensation is a very important factor in suffering. There may be other important factors that merit examination. In any case, the nature of this reaction and the factors that influence it are poorly understood and need study. It is not inconceivable that ingeniously devised experiments that utilize pain of both pathological and experimental origin may be useful not only as mentioned but also in investigation of the influence of fatigue, adaptation, and focus of attention on the pain experience. Work in such a direction is now in progress in the anesthesia laboratory at Massachusetts General Hospital.

The dangers of conclusion based upon causality are well known. It has been shown, however, that, in a situation where the anxiety level is high, as in civil

surgery, wound pain of sufficient degree to require narcotics is far more common than it is in a situation where desperate anxiety (fear of sudden death on the battlefield) has been replaced by a far lesser worry (a wound). It can be pointed out that this finding is in accord with several other types of observations. Malmo and Shagass,[9] in a study of the effects of experimentally induced thermal pain in normal subjects and in pathologically anxious patients, found when they studied striated muscle activity such as finger movements and neck muscle potentials that the greater the degree of anxiety as reflected in the muscular activity, the greater the frequency with which pain was signaled. The differences are statistically reliable. Their data also show that the more severe the anxiety, the greater the overreaction to painful stimuli. Their findings corroborate earlier observations of Chapman, Finesinger, Jones, and Cobb[10] that the threshold values of thermal pain stimulation are higher in controls than in psychoneurotic patients (half of whom were suffering from anxiety) as far as motor reaction to pain is concerned. These findings, which deal with experimental pain, appear to have an analogue in the clinical findings, reported in the present study, that pathological pain was encountered far more frequently in a situation filled with anxiety than in one in which tremendous anxiety has been greatly lessened. Observations complementing these are those of Hill, Kornetsky, Flanary, and Wikler[11] and Hill, Belleville, and Wikler,[12] in which they appear to show in an interesting experimental situation that morphine relieves anxiety and hence, they believe, relieves pain. In our findings, when there was more anxiety, more pain appeared. In the two circumstances there seems to be an important relationship between pain and anxiety. In our situation, when anxiety was present, the incidence of pain increased; in the Lexington group, when anxiety was relieved, pain was relieved. Since such different approaches lead to the same conclusion, it seems unlikely that a false attribution to causality could explain all of these observations.

Dubos[13] has summarized the evidence to show that the etiology of most diseases has several components. It is now clear that those two strong characters, Pasteur and Koch, pressed too narrowly for their "doctrine of specific etiology" (a given microbe for a given disease) and that there is something to be said for the reserve Pidoux and Virchow showed during what might be called the overestablishment of the doctrine of specificity of cause of disease. It is now known that in nearly all infectious and metabolic diseases physiological and environmental factors enter to determine the disease process. The human body is full of latent infectious organisms that act in disease processes only under special physiological or environmental conditions. In the work presented here, we can pursue this view of nonspecificity even further and apply it not to a disease but to a symptom of disease. A wound is not alone the cause of pain; the significance of the wound may be the paramount factor in determining the production of pain. Hardy, Wolff, and Goodell[14] in attempting to generalize concerning the pain experience have said, "The adequate stimulus for pain sensation is the damaging of tissue." From the data given in this present study, this is clearly not the case: great tissue damage can be produced without pain being experienced. Neither the wounding nor the wound is at times an adequate stimulus for pain.

## Summary and Conclusions

In a situation in which a wound has great advantage and means escape from overpowering anxiety and fear of death on the battlefield (war wounds terminating military service), extensive wounds are associated with comparatively little pain. In a situation in which the wound connotes disaster (major surgery in civil life), lesser wounds are associated with far more pain than in the former situation. The essential difference appears to be in the difference in anxiety level in the two cases, in the attitude of the patient, and in his reaction to his wound. The findings reported here support the 60-year-old concept of the importance in suffering of the reaction component as opposed to the original pain sensation.

In experimental pain it might seem possible to control the "reaction or processing component" of suffering and, therefore, to measure the action of analgesic agents on the "original sensation." Since many different and widely separated groups of careful investigators have failed to confirm this, it appears reasonable to conclude that analgesic agents have in the experimental situation relatively little effect upon original sensation but very great effect upon the reaction component, since with pain of pathological origin when the reaction is apparently great, consistent and reproducible effects of analgesic agents can be demonstrated. Thus analgesic agents appear to have their principal action on the reaction component.

Extent of wound bears only a slight relationship, if any (often none at all), to the pain experienced. This fact fails to support the relevance of experimental pain work to the pathological pain experience. The concept underlying all experimental pain methods, that the more severe the stimuli to nerve endings, the more the pain, does not hold for pathological pain. Thus the usefulness of experimental pain methods in man for the purposes to which they have often been put (evaluation of the analgesic power of narcotic agents) is questionable. Just as the doctrine of specific etiology of disease falls short, so also is the relationship not precise between cause and a symptom of disease (injury) as far as a wound and resulting pain are concerned. The level of anxiety is important in considering the production of pain. The unfortunate and common practice of administering powerful analgesic agents to all injured individuals is clearly unsound. A considerable number of such patients may not have pain. In others alteration of mood, as for example relief of anxiety, can have beneficial effect. In short, even a great wound is not necessarily an "adequate stimulus for pain."

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# "ATHLETIC PSEUDONEPHRITIS"—ALTERATION OF URINE SEDIMENT BY ATHLETIC COMPETITION

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• *Urine specimens were obtained from 47 football players who had passed complete physical examinations and denied renal disease. Each submitted at least one normal specimen together with additional specimens before and after games or strenuous practice.*

*Each day was scored as to the severity of the required exertions, and this score was found to be roughly proportionate to the frequency of abnormalities in the urine. On no day did every member of the squad submit a completely normal specimen. In addition to protein, the more unusual types of formed elements appeared in 27 of the 424 urine specimens examined; these included red blood cell casts in 10, epithelial casts in 7, broad casts in 3, and white blood cell casts in 3. During the study, gross hematuria appeared in one subject. In every instance, the abnormalities disappeared when the daily exercise was made less severe.*

*These findings explained the spontaneous recovery of an athlete whose history of gross hematuria, which is given in some detail, had raised the suspicion of acute glomerulonephritis.*

My interest in urinary sediment changes after exercise resulted from seeing a young male who entered the student health service of the University of Pennsylvania on Sept. 6, 1955, complaining of a sore throat of eight days' duration and tea-colored urine of six hours' duration.

## Report of a Case

An 18-year-old male was referred from the preseason football training camp, where he had reported two days after developing a severe sore throat at home on Aug. 30. At camp, the initial therapy by the team physician consisted of gargles, acetylsalicylic acid, and fluids. As the student was not febrile nor more than slightly annoyed by his symptoms, he was allowed to enter into the full training program. No subjective improvement had occurred by Sept. 3, and 600,000 units of procaine penicillin G were given intramuscularly on that and the following day. After an active scrimmage on Sept. 5, the man noticed that his urine had become the color of "strong tea." A second specimen obtained three hours later was again that color, and he was sent to the Hospital of the University of Pennsylvania for admission. On entry he denied the presence of headache, backache, or the reception of unusual trauma to the back or abdomen. He also denied previous hematuria, previous renal disease, contact with poison ivy, and recent insect bites. The family history was negative for renal disease.

The physical examination showed a healthy young male in no distress, with blood pressure of 140/90 mm. Hg. The oropharynx was reddened and speckled with white exudates. Bilateral cervical lymphadenopathy was present. There was no costovertebral angle tenderness, and the remainder of the examination gave normal results. The hemoglobin level was 12.1 gm. per 100 cc., and the white blood cell count was 6,900 per cubic millimeter, with a normal differential. The urine had a specific gravity of 1.030 and was acid in reaction; it contained a trace of protein, innumerable red and white blood cells, and occasional granular and white blood cell casts. Diagnosis of acute glomerular nephritis was made, and the patient was placed on therapy with bed rest, acetylsalicylic acid, and 600,000 units of procaine penicillin G intramuscularly every six hours.

The subsequent clinical course and laboratory studies did not substantiate the diagnosis. Blood pressure remained well within the normal limits, averaging 120/75 mm. Hg. The temperature did not rise above 98.6 F (37 C) orally. His fluid output remained well above oliguric levels, averaging 1,150 cc. every 24 hours. Throat culture did not reveal the presence of hemolytic streptococci; antihyaluronidase and antistreptolysin titers were in an intermediate range but were felt to be too low for acute glomerular nephritis. Further urine specimens were free of albumin and showed progressive disappearance of casts and red blood cells until the third hospital day. On that day the urine contained a sudden shower of red blood cell casts, considered identical with those seen in acute glomerular nephritis. Over the next 24 hours these disappeared entirely, and urinary examinations showed normal results for the remainder of his 10-day hospitalization.

By the 10th day the sore throat and cervical lymphadenopathy had disappeared; the hemoglobin level was reported at 14.3 gm. per 100 cc. After a staff conference it was concluded that the clinical picture was probably that of "football hematuria" with associated pharyngitis, even though red blood cell casts had occurred in the urine for one day. With that diagnosis the patient was discharged. During a two-week period of observation at home, both physical examinations and urinalyses daily failed to reveal the presence of disease. At the end of that time he was allowed to return to active participation in football. Through three months of follow-up, he has shown no clinical evidence of nephritis. Results of the urinalyses have been included in the study presented below. These were usually normal but on occasion demonstrated the abnormalities found in the urinalyses of his fellow teammates. His gross hematuria has not recurred.

From the Hospital of the University of Pennsylvania.

The interesting clinical course of this patient led to a search of medical literature for articles describing the effect of exercise on the urinary sediment, and several reports were found. It was more than 200 years after Dekkers [1] first observed that protein might occur in the urine and over 50 years after Bright correlated proteinuria and renal disease [2] that Collier,[3] in 1907, demonstrated proteinuria in the urinary collections of crew racers after a race. Casts were first seen in the urine in 1843,[4] and in 1844 Henle [5] showed their renal origin. Barach was the first to describe the presence of casts in athletes' urine, when he reported a study of the urines of 19 marathon runners after a 40-km. race.[6] He found proteinuria and cylindruria in all 19 specimens and red blood cells in 18. Several of the specimens were grossly bloody. One week and three weeks after the race he found protein and casts in fewer specimens. In 1920 Barach followed up his original study with a report [7] of the urinary sediments obtained from track and baseball participants. He found that after 40 minutes of exercise the urines contained protein, hyaline and granular casts, and red blood cells. He noted further that the casts were both narrow and broad and that each variety contained red and/or white blood cells. He stated that removal from daily exercise resulted in prompt disappearance of the sediment abnormalities.

Results obtained by Amelar and Solomon in 1954 [8] provided support for Barach's work. These men examined the urines of 103 professional boxers immediately preceding and shortly after fights and found that 68% of the specimens showed proteinura, 73% red blood cells in pathological numbers, and 26% hyaline or granular casts. While they felt that the hematuria was the result of trauma to the kidney areas, they did not mention Barach's study of participants in sports involving apparently much less direct trauma to the renal areas. In 1955 Boone and his associates [9] found hematuria, proteinuria, and cylindruria in the urinary sediments of football players after an active scrimmage or game. It was noted that sediment abnormalities present on Wednesday usually disappeared by Saturday if the man did not participate in the week-end game. No article describing a higher incidence of kidney disease in the athletic portion of the population could be found. From the literature, therefore, evidence was available to indicate that athletic competition resulted in alteration of the urinary sediment to some degree. The problem of whether such competition could result in the appearance of the red blood cell cast in the urinary sediment, long considered to be a grave diagnostic and prognostic sign, was not satisfactorily answered. Accordingly, the following study was made.

## Materials and Methods

Through the cooperation of the team physician, coach, team managers, and the players themselves, urine specimens were collected from the 47 members of the 1955 University of Pennsylvania varsity football squad. Every man had passed a complete physical examination at the beginning of the year, and all denied renal disease. Urine specimens were obtained after daily practice and Saturday games for a two-week period during midseason. Any players suffering from rhinorrhea, pharyngitis, and/or otitis on any day or days of the study was asked to report this as "illness." Physical exertion during practice and the games was estimated in degrees ranging from 0 on days when no practice was held through 3+ to 5+ on days of a game; no physical contact occurred on days rated 1+. The specimens collected were inspected for color and examined for pH and specific gravity; after centrifugation the sediment was studied for cells, casts, and other formed elements. Protein was detected by the addition of sulfosalicylic acid to the supernatant fluid. An "abnormal" urine was considered to be one showing at least 1+ protein and at least 3 red blood cells per high-power dry field, or at least 5 casts per high-power dry field. A specimen was "very abnormal" if,

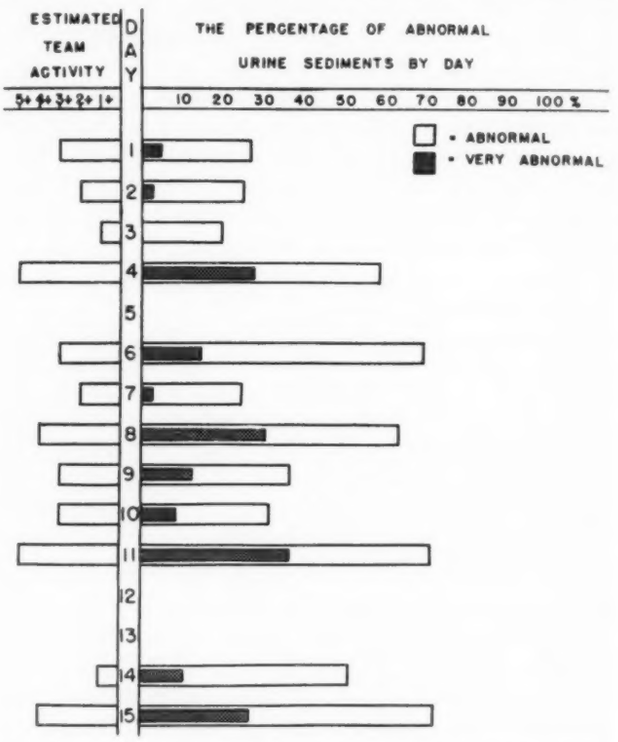


Fig. 1.—Influence of physical activity on production of urinary sediment abnormalities, such as albumin, casts, and/or red blood cells.

in addition to containing protein, it contained more than 10 red blood cells per high-power dry field and/or more than 20 casts per high-power dry field of the centrifuged sediments.

## Results

The study covered the period from Nov. 1 to Nov. 15, 1955, and total of 424 urine specimens were obtained on 12 days during this interval. Each of the 47 men submitted at least one entirely normal specimen for examination, thus furnishing his own control. Of the 424 specimens, 190, or 44.8%, met the criteria established for abnormal urine. With six exceptions all urine specimens containing abnormal elements were acid to litmus paper. The volumes of a large proportion of the specimens were too small for determination of specific gravity. Therefore, this feature was not included in the final analysis. In figure 1 the percentages of abnormal and grossly abnormal urinary sediments found in the urine specimens examined each

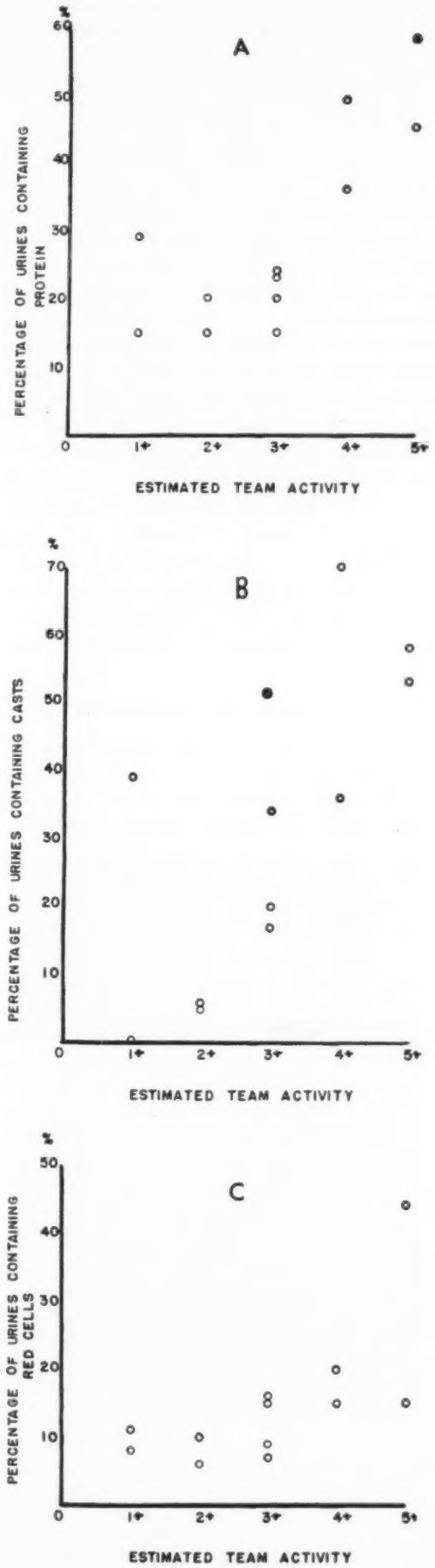


Fig. 2.—In relation to increasing physical activity, *A*, proteinuria; *B*, cylindruria; *C*, hematuria microscopically.

day are shown. The occurrence of protein is related directly to the estimated team activity in figure 2*A*. Similar relationships are plotted for casts and red blood cells in figure 2*B* and *C*. From these figures it becomes apparent that increasing urinary sediment abnormalities are related to increasing team activity. It is to be noted that on no day did every member of the squad submit a completely normal specimen. Figure 3 presents a comparison of the sediments found in the urine specimens of the participants and the sediments from the specimens of nonparticipating players after each of the two games included in the study period. In both groups the sediments were comparable on the day preceding the games, while only the participating group developed marked changes in urinary sediment after the games. After the first light practice a few days later, cylindruria was present in both groups, but red blood cells continued to appear only in the urine specimens of the participating group.

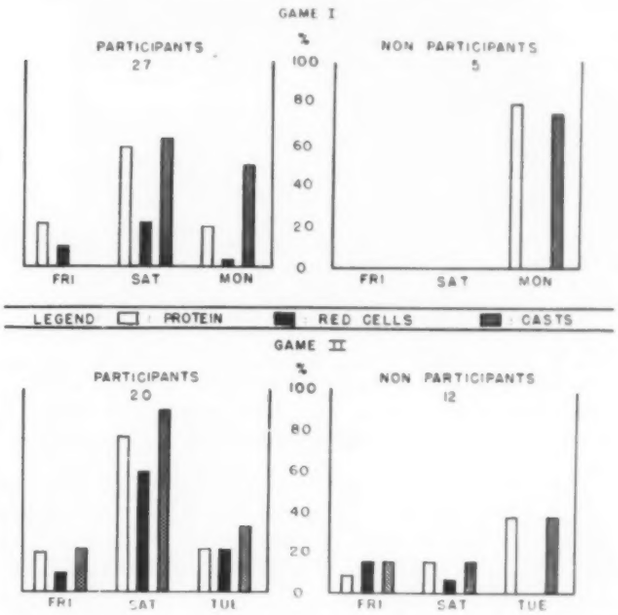


Fig. 3.—Persistent hematuria 48 and 72 hours after participation in two football games, with nonparticipating group as control.

The more unusual types of formed elements occurred in 27 of the 424 specimens (6.4%) but, more significantly, in the specimens obtained from 13 of the 47 men (28%) participating in the study. Red blood cell casts, seen in large numbers, were found in 10 specimens, epithelial casts in 11, broad granular casts in 3, and white blood cell casts in 3. The sediment in one urine specimen, showing the usual elements plus a broad granular cast (containing coarse granules), can be seen in figure 4. Figure 5 shows a red blood cell cast in a specimen containing free red blood cells. During the study, gross hematuria occurred in only one subject. It appeared after the second game, and four days later the urine was found to contain many red blood cell casts. A physical examination and titrations for streptococcic infection were negative. The urine had cleared completely by the seventh day. Twenty of the 47 men submitted a total of 52 urine specimens accompanied by a report of "illness." Seventeen (33%) of these specimens were found to be abnormal. This

percentage is less than the percentage of abnormal specimens obtained from the entire group. This was expected, since some players did not report for practice when ill and since those who did practice did so less enthusiastically because of their sickness.

Fig. 4.—Reproduction of color slide showing urinary sediment, with broad and narrow casts, of football player immediately after practice (× 120).

## Comment

This study is intended to confirm and reemphasize the fact that formed elements heretofore considered almost pathognomonic of parenchymal renal disease may appear in the urine of a player during the athletic season without other evidence of glomerular nephritis. These elements most frequently are protein, hyaline and granular casts, and red blood cells; however, red blood cell, epithelial, broad, and white blood cell casts may also be found, as Barach's study [7] and this report have shown. Unpublished information from other workers [10] confirms the occurrence of red blood cell casts in the urine specimens of football players; as was the case in this study, they were associated with hematuria seen macroscopically and microscopically. The evidence presented here indicates that there is a day-to-day carry-over of the sediment abnormalities, e. g., the hematuria in the participant group of figure 3. Bodies resembling, but not identical with, oval fat bodies were seen in six specimens; their significance was not apparent.

Of the 47 men in this study 28% had one of the illnesses commonly caused by hemolytic streptococci and concurrently submitted a urinary sediment identical to that considered suggestive of acute glomerular nephritis. Lacking the evidence presented in this report, a physician examining any one of these men might incorrectly have made that diagnosis. It was observed during this study that, after a day of severe exertion, the successive daily urinary sediments from the individual players showed a decreasing number of formed elements until severe exercise again occurred. From this observation and the impressions of other workers [11] it can be stated that the desirable program for the athlete with a history or clinical picture of an upper respiratory infection and urinary sediment abnormalities is a one-week period of rest under observation. Until this period of time has elapsed, no final decision should be made as to the significance of findings in the urinary sediment. A careful appraisal of the clinical picture is necessary before the diagnosis of nephritis can be made. If the clinical picture and laboratory tests are negative, and if the urinary abnormalities clear within the week, the diagnosis of "athletic pseudonephritis" is probably justified.

In conclusion, it must be remembered that formed elements usually held to be indicative of nephritis may be found in the urinary sediment obtained from an athlete during the season of his active participation in a sport. Under such circumstances, however, these elements usually do not indicate serious disease, for their disappearance from the urinary sediment is prompt when the athlete is withdrawn from daily exertion.

## Summary and Conclusions

A football player was admitted to the student health service of the Hospital of the University of Pennsylvania with a sore throat and gross hematuria. His urine was found to contain albumin; red and white blood cells; and hyaline, granular, and red blood cell casts. Only when the urinary abnormalities cleared promptly and when no further evidence of acute glomerular nephritis was found was exercise consid-

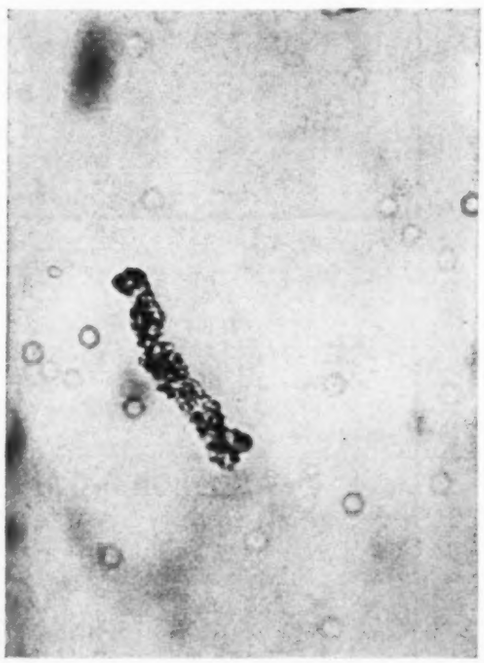

Fig. 5.—Reproduction of color slide showing urinary sediment, with red blood cell and red blood cell cast, of football player two days after appearance of hematuria microscopically (× 120).

ered as a possible cause of the urinary sediment abnormalities. His case served to stimulate a review of the literature. This revealed that red and white blood cells, protein, and casts of the hyaline, granular, and possibly red blood cell varieties had been seen after exertion in the urine specimens of athletes. Subsequently, a study was made of the specimens obtained from 47 varsity football players during a midseason two-week period in November, 1955. The results showed clearly that participation in a heavy scrimmage or game produced changes resembling or identical with the urinary sediment of patients with acute glomerular nephritis in 44% of 424 urine specimens. Red blood cell, epithelial, and white blood cell casts were among the abnormalities noted in the sediments. It was observed that the specimens tended to clear after a few days of less strenuous activity. The name "athletic pseudonephritis" is proposed for this phenomenon, with the hope that the sediment abnormalities that appear in the urine of an athlete during the season of his participation will not lead to the incorrect diagnosis of nephritis in a healthy individual or in candidates for life insurance or induction into the armed forces.

c/o Dr. K. D. Gardner, 2856 Union St., San Francisco 23.

Dr. Paul Schrode, Director of Student Health of the Hospital of the University of Pennsylvania; Dr. Harry Farrell, team physician; and Steve Sebo, coach, cooperated in this study.

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# DOMICILIARY MEDICAL PRACTICE IN AN INDIGENT POPULATION

Richard B. Davis, M.D.
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• *The work of city physician in Burlington, Vt., has been taken over by fellows in the College of Medicine of the University of Vermont. The fellow on his house calls is accompanied, as the city physician was formerly accompanied, by two or three medical students assigned to this duty in rotation for a period of two weeks during their senior year.*

*The procedure, described in detail, involved 5,781 home visits in one year. Of these, 600 were on Sundays or holidays, and 160 were made between midnight and 8 a. m. A total of 6,321 cases classified under 243 headings were seen, and valuable data as to the frequency of various types of treatment, the use and misuse of antibiotics, the seasonal distribution of illness, and the occurrence of unnecessary calls were obtained. Ear, throat, and respiratory afflictions predominated, and the majority of patients were treated successfully at home.*

As early as 1860 the town of Burlington, Vt., set aside funds for the remuneration of "town physicians," whose purpose was the home medical care of its indigent population. Subsequent to its incorporation as a city in 1865, Burlington (population in 1950, 33,155) continued its program of home medical care by supporting a "city physician." In 1914 this program first was utilized by the College of Medicine of the University of Vermont for teaching purposes, when medical students began to accompany the city physician on his house calls. The home care program assumed its present form in 1948, when the fellows in internal medicine of the University of Vermont were given the responsibilities of the city physician as part of their postgraduate training.

The city physician not only is responsible for the management of acute illness but also cares systematically for many varieties of long-term illness. He works in cooperation with certain ancillary health and rehabilitation agencies, namely the outpatient clinics of the Mary Fletcher Hospital, the Bishop de Goesbriand Hospital, and the city dispensary, the Visiting Nurse Association, the alcoholic rehabilitation commission, the Howard Family Service Center, and the college of medicine's mental health clinic. Except for its jurisdiction, the program conforms closely to the principles of home care outlined by Bluestone,[1] and, in the segment of the population seen, encompasses many of the entities for which specialized home care programs previously have been described.[2]

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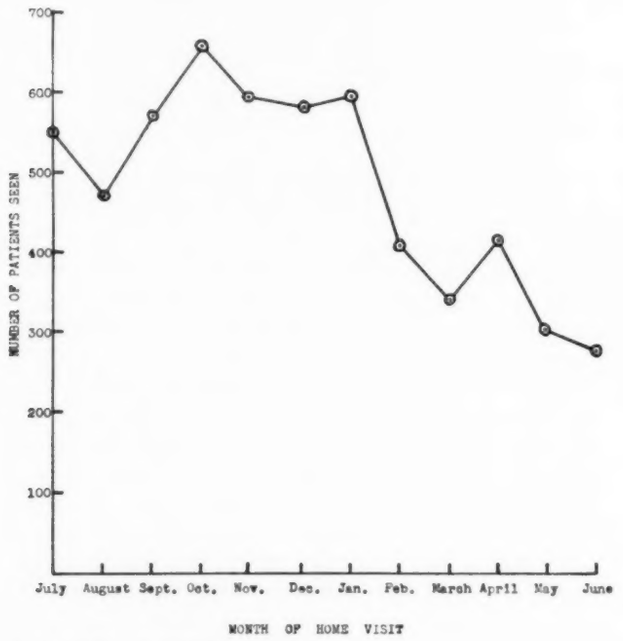
At the present time two to three medical students, who are assigned in rotation for a period of two weeks during their senior year, accompany the city physician on his daily house calls. During the day, the senior student, under the fellow's direct supervision, is responsible for the diagnosis and treatment of the patient's illness. At night a single student makes the calls alone, with the fellow being readily available if his assistance is required for any reason. The student thus learns to accept the immediate responsibility for managing illness alone. He also acquires a knowledge of the resources and techniques available to the patient and the community for the prevention of disease and

the maintenance of health, learns to work with the medical and community teams that provide health services, and gains insight into the social and cultural setting in which one segment of medical practice is carried on.[3]

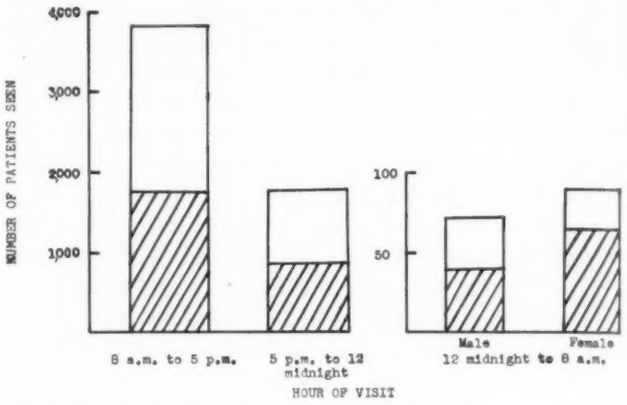
With the objective of defining more clearly the scope of domiciliary medicine and general practice, several studies have been conducted, including those of Pemberton,[4] McGregor,[5] Fry,[6] and Brackett and co-workers[7] in Great Britain and those of Couter, Held, and York[8] and Forbes[9] in the United States. Couter's series of 1,000 consecutive residence visits, however, was restricted to private patients, who were more than 13 years old, with conditions restricted "as far as possible" to the field of internal medicine, and Forbes' series was restricted to night calls. In the belief that additional cogent information could be obtained concerning the total medical needs of the community and the domiciliary care of patients, in a group unfettered by financial obligation and unrestricted with respect to age or type of disability, a one-year study of the city physician's practice was conducted between July 1, 1954, and June 30, 1955.




1. Monthly distribution of home visits.

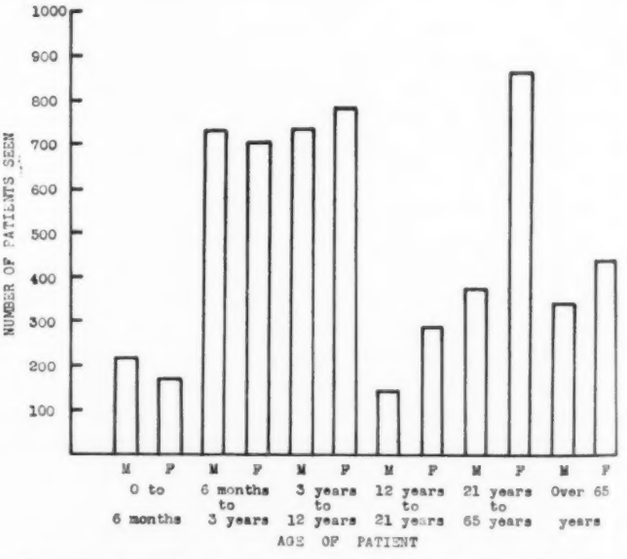
## Methods

A form card was filled out immediately on making each home visit, recording the patient's name, age, and sex; the date, time, and duration of the call; the diagnostic impression; the treatment used; and the disposition of the illness on follow-up visits. An evaluation of the necessity of the call also was made by attempting to answer the question of whether the patient could have been seen in an outpatient clinic without jeopardizing his medical condition, regardless of socioeconomic considerations. Calls were received from a central answering service, which the patient called, and thus were not screened. In general all routine calls (follow-up and nonurgent visits) were made between 8 a. m. and 5 p. m. Calls received after 5 p. m. were answered as soon as practicable after being received and were reviewed with the student the following morning. When any doubt existed concerning the diagnostic impression or treatment, the patient was seen together with the fellow. The vast majority of patients were treated with medicaments from the physician's bag, which was carried on all visits. Referral, when indicated, was made to one of the outpatient




2. Hourly distribution of home visits. Number of necessary visits is indicated by shaded area.

clinics, and, when necessary, hospitalization was carried out. All referred or hospitalized patients were carefully followed to ascertain the validity of the initial impression and therapy, and the diagnosis listed in each case was the revised, or final, impression when it differed from the initial impression. For the purpose of further clarifying the diagnosis and disposition of the illnesses seen, many follow-up visits were made after July 1, 1955. No charge was made for the visits, with the very occasional exception of visits to nonindigent patients.




3. Number of patients seen in each age group. M, male; F, female.

## Results

In the one-year period of study, 5,781 home visits were made, for an average of 15.8 visits daily, including Sundays. Six hundred of these visits were made on Sundays (including Christmas and New Year's Day),

TABLE 1.—*Diseases Encountered in 5,781 Home Visits*

| Type of Disease | Total No. | Disease Entities Seen on Initial Visit* | | No. of Follow-Up Visits for Each Entity | Entities Seen Between Midnight and 8 A.M. | No. of Hospital Admissions for Each Entity |
|---|---|---|---|---|---|---|
| Eye, ear, nose, and throat disease | 1,481 | Acute upper respiratory infection | 553 (59) | 135 | 6 | 0 |
| | | Acute otitis media | 431 (83) | 373 | 15 | 2 |
| | | Follicular tonsillitis | 237 (61) | 243 | 7 | 2 |
| | | Acute pharyngitis | 154 (32) | 114 | 10 | 1 |
| | | Otitis externa | 17 ( 1) | 2 | 0 | 0 |
| | | Conjunctivitis | 17 ( 0) | 2 | 0 | 0 |
| | | Chronic otitis media | 16 ( 1) | 9 | 0 | 0 |
| | | Aphthous stomatitis | 11 ( 4) | 5 | 1 | 0 |
| | | Acute spasmotic laryngitis | 9 ( 1) | 0 | 2 | 3 |
| | | Epistaxis | 8 ( 3) | 0 | 0 | 0 |
| | | Acute sinusitis | 5 ( 1) | 5 | 0 | 1 |
| | | Vincent's angina | 3 ( 0) | 6 | 0 | 0 |
| | | Peritonsillar abscess | 3 ( 0) | 2 | 0 | 0 |
| | | Acute laryngitis | 2 ( 0) | 0 | 0 | 0 |
| | | Dacryocystitis | 2 ( 0) | 0 | 0 | 0 |
| | | Oral moniliasis | 2 ( 0) | 1 | 0 | 0 |
| | | Bullous myringitis | 2 ( 0) | 0 | 0 | 0 |
| | | Cellulitis of floor of mouth (Ludwig's angina) | 1 ( 0) | 0 | 0 | 1 |
| | | Laceration of tonsillar pillar | 1 ( 0) | 0 | 0 | 0 |
| | | Carcinoma of larynx | 1 ( 0) | 0 | 0 | 0 |
| | | Post-tonsillectomy hemorrhage | 1 ( 0) | 0 | 0 | 1 |
| | | Allergic rhinitis | 1 ( 0) | 0 | 0 | 0 |
| | | Orbital cellulitis | 1 ( 0) | 3 | 0 | 1 |
| | | Blepharitis | 1 ( 0) | 0 | 0 | 0 |
| | | Abrasion of cornea | 1 ( 0) | 1 | 0 | 0 |
| | | Hordeolum | 1 ( 0) | 0 | 0 | 0 |
| Gastrointestinal disease | 335 | Gastroenteritis | 258 (49) | 77 | 7 | 2 |
| | | Acute cholecystitis | 9 ( 0) | 5 | 1 | 3 |
| | | Chronic cholecystitis | 9 ( 0) | 5 | 0 | 1 |
| | | Pylorospasm | 8 ( 0) | 3 | 0 | 0 |
| | | Acute appendicitis | 7 ( 1) | 5 | 0 | 7 |
| | | Peptic ulcer | 5 ( 0) | 4 | 1 | 0 |
| | | Nonspecific gastritis | 5 ( 0) | 2 | 0 | 0 |
| | | Inguinal hernia | 5 ( 1) | 1 | 0 | 0 |
| | | Diverticulitis | 3 ( 0) | 1 | 0 | 1 |
| | | Hiatus hernia | 3 ( 0) | 3 | 0 | 0 |
| | | Incarcerated inguinal hernia | 3 ( 1) | 0 | 0 | 3 |
| | | Ischiorectal abscess | 2 ( 0) | 0 | 0 | 1 |
| | | Acute infective hepatitis | 2 ( 1) | 1 | 0 | 2 |
| | | Alcoholic gastritis | 2 ( 0) | 1 | 0 | 0 |
| | | Mesenteric lymphadenitis | 2 ( 0) | 2 | 0 | 0 |
| | | Fecal impaction | 2 ( 0) | 1 | 0 | 0 |
| | | Subacute intestinal obstruction secondary to spastic ileus | 1 ( 2) | 21 | 7 | 6 |
| | | Laennec's cirrhosis | 1 ( 0) | 2 | 0 | 0 |
| | | Duodenitis | 1 ( 0) | 2 | 0 | 0 |
| | | Pain secondary to thrombosed hemorrhoid | 1 ( 0) | 0 | 0 | 0 |
| | | Lymphosarcoma of stomach | 1 ( 0) | 1 | 0 | 1 |
| | | Reticulum cell sarcoma of stomach | 1 ( 1) | 0 | 0 | 1 |
| | | Adenocarcinoma of stomach | 1 ( 0) | 2 | 1 | 0 |
| | | Mucoviscidosis (cystic fibrosis) | 1 ( 0) | 0 | 0 | 0 |
| | | Hematemesis (peptic ulcer) | 1 ( 0) | 0 | 1 | 1 |
| | | Subdiaphragmatic abscess | 1 ( 0) | 0 | 0 | 1 |
| Infectious disease | 312 | Virus infection of undetermined origin | 145 (20) | 76 | 3 | 0 |
| | | Measles | 77 (20) | 106 | 2 | 0 |
| | | Chickenpox | 19 ( 1) | 11 | 0 | 0 |
| | | Rubella | 17 ( 6) | 16 | 1 | 0 |
| | | Mumps | 16 ( 1) | 9 | 0 | 0 |
| | | Exanthema subitum | 14 ( 6) | 18 | 1 | 0 |
| | | Herpes simplex | 4 ( 0) | 0 | 0 | 0 |
| | | Infectious mononucleosis | 4 ( 0) | 0 | 0 | 0 |
| | | Late latent syphilis | 3 ( 0) | 0 | 0 | 0 |
| | | Scarlet fever | 2 ( 0) | 3 | 0 | 0 |
| | | Herpes zoster | 2 ( 0) | 0 | 0 | 0 |
| | | Oxyuriasis (enterobiasis) | 2 ( 0) | 0 | 0 | 0 |
| | | Vaccinia | 2 ( 0) | 1 | 0 | 0 |
| | | Rheumatic fever | 2 ( 0) | 2 | 0 | 1 |
| | | Congenital syphilis | 1 ( 0) | 0 | 0 | 0 |
| | | Erysipelas | 1 ( 0) | 1 | 0 | 0 |
| | | Homologous serum jaundice | 1 ( 0) | 0 | 0 | 0 |
| Respiratory disease | 309 | Acute bronchitis | 131 (25) | 98 | 4 | 5 |
| | | Bacterial pneumonia | 96 (28) | 190 | 3 | 24 |
| | | Bronchial asthma | 41 (16) | 66 | 2 | 3 |
| | | Chronic bronchitis | 15 ( 0) | 5 | 0 | 0 |
| | | Pulmonary emphysema | 11 ( 2) | 4 | 0 | 0 |
| | | Bronchiectasis | 3 ( 0) | 2 | 0 | 0 |
| | | Pleuritis | 3 ( 2) | 2 | 0 | 0 |
| | | Micrococcic (staphylococcic) pneumonia and empyema | 2 ( 0) | 0 | 0 | 2 |

TABLE 1.—*Diseases Encountered in 5,781 Home Visits*—Continued

| Type of Disease | Total. No. | Disease Entities Seen on Initial Visit | | No. of Follow-Up Visits for Each Entity | Entities Seen Between Midnight and 8 A. M. | No. of Hospital Admissions for Each Entity |
|---|---|---|---|---|---|---|
| | | Pulmonary tuberculosis | 2 ( 0) | 1 | 0 | 0 |
| | | Acute pulmonary edema | 2 ( 0) | 0 | 2 | 1 |
| | | Primary atypical pneumonia | 1 ( 0) | 5 | 0 | 0 |
| | | Spontaneous pneumothorax | 1 ( 1) | 0 | 0 | 1 |
| | | Lung abscess (Micrococcus) | 1 ( 0) | 1 | 0 | 1 |
| Skin disease | 284 | Nonspecific allergic dermatitis | 52 ( 6) | 13 | 0 | 0 |
| | | Cellulitis | 43 ( 5) | 14 | 0 | 1 |
| | | Contusion of skin | 25 ( 6) | 2 | 0 | 0 |
| | | Furunculosis | 24 ( 6) | 4 | 2 | 1 |
| | | Impetigo | 20 ( 1) | 5 | 0 | 0 |
| | | Laceration of skin | 20 ( 5) | 4 | 1 | 0 |
| | | Insect bites | 18 ( 2) | 5 | 0 | 0 |
| | | Urticaria | 13 ( 3) | 1 | 1 | 0 |
| | | First or second degree burn | 13 ( 2) | 1 | 0 | 0 |
| | | Rhus dermatitis (poison ivy) | 9 ( 2) | 2 | 0 | 0 |
| | | Diaper rash | 8 ( 0) | 0 | 0 | 0 |
| | | Abscess of skin | 6 ( 0) | 1 | 0 | 1 |
| | | Eczema | 6 ( 0) | 0 | 0 | 1 |
| | | Paronychia | 5 ( 1) | 1 | 0 | 0 |
| | | Nonspecific ulceration | 4 ( 0) | 1 | 0 | 1 |
| | | Varicose ulcer | 2 ( 0) | 6 | 0 | 0 |
| | | Pityriasis rosea | 2 ( 0) | 1 | 0 | 0 |
| | | Intertrigo | 2 ( 0) | 1 | 0 | 0 |
| | | Stasis dermatitis | 2 ( 0) | 0 | 0 | 0 |
| | | Tinea capitis | 2 ( 0) | 0 | 0 | 0 |
| | | Dermatophytosis | 2 ( 0) | 0 | 0 | 0 |
| | | Pediculosis capitis | 1 ( 0) | 0 | 0 | 0 |
| | | Pediculosis corporis | 1 ( 0) | 0 | 0 | 0 |
| | | Mastitis | 1 ( 0) | 0 | 0 | 0 |
| | | Omphalitis | 1 ( 0) | 0 | 0 | 0 |
| | | Angioneurotic edema | 1 ( 0) | 0 | 0 | 0 |
| | | Breast abscess | 1 ( 0) | 0 | 0 | 1 |
| Neuropsychiatric disease | 256 | Psychoneurosis | | | | |
| | | anxiety state | 165 (14) | 61 | 8 | 0 |
| | | anxiety hysteria | 28 ( 3) | 0 | 6 | 1 |
| | | Acute alcoholic intoxication | 43 ( 5) | 10 | 12 | 0 |
| | | Cerebral vascular accident | 20 ( 8) | 35 | 2 | 8 |
| | | Essential epilepsy | | | | |
| | | grand mal | 10 ( 2) | 6 | 2 | 2 |
| | | petit mal | 2 ( 0) | 0 | 0 | 0 |
| | | Tension headache | 11 ( 2) | 3 | 0 | 0 |
| | | Vascular headache | 7 ( 2) | 1 | 1 | 0 |
| | | Cerebral concussion | 5 ( 0) | 0 | 0 | 3 |
| | | Chronic alcoholic intoxication | | | | |
| | | delirium tremens | 3 ( 2) | 1 | 0 | 1 |
| | | Simple syncope | 3 ( 1) | 0 | 1 | 0 |
| | | Schizophrenic reaction | 3 ( 1) | 6 | 1 | 2 |
| | | Hyperventilation syndrome | 3 ( 2) | 0 | 0 | 0 |
| | | Meningitis | | | | |
| | | Epidemic cerebrospinal (meningococcic) | 2 ( 1) | 0 | 1 | 2 |
| | | pneumococcic | 1 ( 0) | 0 | 0 | 1 |
| | | Post-traumatic headache | 2 ( 0) | 0 | 0 | 0 |
| | | Senile dementia | 2 ( 0) | 2 | 2 | 0 |
| | | Reactive depressive state (suicide attempt) | 1 ( 0) | 0 | 0 | 0 |
| | | Radiculitis | 1 ( 0) | 0 | 0 | 0 |
| | | Narcotic addiction | 1 ( 0) | 0 | 0 | 1 |
| | | Insomnia | 1 ( 0) | 0 | 0 | 0 |
| | | Anterior poliomyelitis | 1 ( 0) | 0 | 0 | 1 |
| | | Hypertensive encephalopathy | 1 ( 0) | 1 | 0 | 0 |
| Musculoskeletal disease | 124 | Traumatic myositis | 37 ( 5) | 4 | 2 | 1 |
| | | Ligamentous strain | | | | |
| | | lumbosacral | 16 ( 2) | 0 | 0 | 0 |
| | | ankle | 14 ( 0) | 2 | 0 | 0 |
| | | knee | 2 ( 0) | 0 | 0 | 0 |
| | | shoulder | 2 ( 0) | 1 | 0 | 0 |
| | | Degenerative joint disease | 23 ( 3) | 4 | 0 | 0 |
| | | Acute bursitis | 6 ( 2) | 3 | 1 | 0 |
| | | Fractured rib | 5 ( 3) | 2 | 0 | 0 |
| | | Fractured hip | 3 ( 1) | 0 | 3 | 3 |
| | | Osteitis deformans | 2 ( 0) | 0 | 0 | 0 |
| | | Herniated nucleus pulposus | 2 ( 1) | 0 | 0 | 2 |
| | | Traumatic coccygodynia | 2 ( 0) | 0 | 0 | 0 |
| | | Fractured ulna | 1 ( 0) | 0 | 0 | 0 |
| | | Fractured metatarsal | 1 ( 0) | 0 | 0 | 0 |
| | | Fractured phalanx (finger) | 1 ( 0) | 0 | 0 | 0 |
| | | Dislocation of shoulder | 1 ( 0) | 0 | 1 | 0 |
| | | Tenosynovitis | 1 ( 0) | 3 | 0 | 0 |
| | | Fractured skull | 1 ( 0) | 0 | 0 | 1 |
| | | Osteoporosis | 1 ( 1) | 0 | 0 | 0 |

TABLE 1.—*Diseases Encountered in 5,781 Home Visits*—Continued

| Type of Disease | Total No. | Disease Entities Seen on Initial Visit | | No. of Follow-Up Visits for Each Entity | Entities Seen Between Midnight and 8 A. M. | No. of Hospital Admissions for Each Entity |
|---|---|---|---|---|---|---|
| | | Costal chondritis | 1 ( 0) | 0 | 0 | 0 |
| | | Polyarthritis of unknown origin | 1 ( 1) | 1 | 1 | 1 |
| | | Rheumatoid arthritis | 1 ( 1) | 0 | 0 | 0 |
| Genitourinary disease | 116 | Cystitis | 21 ( 3) | 10 | 0 | 0 |
| | | Intrauterine pregnancy | 16 ( 1) | 5 | 0 | 0 |
| | | Spontaneous abortion | 11 ( 0) | 7 | 5 | 5 |
| | | Pelvic inflammatory disease | 10 ( 0) | 3 | 1 | 3 |
| | | Dysmenorrhea | 8 ( 2) | 3 | 0 | 0 |
| | | Menorrhagia | 7 ( 0) | 3 | 0 | 0 |
| | | Nausea and vomiting of pregnancy | 7 ( 2) | 2 | 1 | 0 |
| | | Benign prostatic hypertrophy | 7 ( 2) | 3 | 0 | 0 |
| | | Chronic pyelonephritis | 6 ( 1) | 5 | 0 | 1 |
| | | Menorrhagia | 3 ( 0) | 0 | 3 | 0 |
| | | Carcinoma of uterine cervix | 2 ( 1) | 0 | 0 | 1 |
| | | Carcinoma of prostate | 2 ( 2) | 30 | 0 | 3 |
| | | Paraphimosis | 2 ( 0) | 0 | 0 | 0 |
| | | Intermenstrual pain (Mittelschmerz) | 2 ( 0) | 0 | 0 | 0 |
| | | Nonspecific vaginitis | 2 ( 0) | 0 | 0 | 0 |
| | | Trichomonas vaginitis | 1 ( 0) | 0 | 0 | 0 |
| | | Urinary retention (urethral stricture) | 1 ( 0) | 0 | 0 | 1 |
| | | Urinary retention (atonic bladder) | 1 ( 0) | 0 | 0 | 1 |
| | | Enuresis | 1 ( 0) | 0 | 0 | 0 |
| | | Chronic cervicitis | 1 ( 0) | 0 | 0 | 0 |
| | | Acute glomerulonephritis | 1 ( 0) | 0 | 1 | 1 |
| | | Prostatis | 1 ( 0) | 0 | 0 | 1 |
| | | Ureterolithiasis | 1 ( 0) | 0 | 1 | 1 |
| | | Full-term spontaneous delivery (placenta retained) | 1 ( 0) | 6 | 0 | 1 |
| | | Polycystic disease of kidneys | 1 ( 0) | 0 | 0 | 0 |
| Cardiovascular disease | 93 | Arteriosclerotic cardiovascular disease | | | | |
| | | with congestive cardiac failure | 31 ( 8) | 313 | 0 | 7 |
| | | without congestive cardiac failure | 13 ( 4) | 22 | 0 | 0 |
| | | Atrial fibrillation | 11 ( 0) | 0 | 0 | 0 |
| | | Essential hypertension | 10 ( 1) | 6 | 0 | 0 |
| | | Angina pectoris | 9 ( 3) | 4 | 1 | 0 |
| | | Hypertensive cardiovascular disease with congestive cardiac failure | 6 ( 1) | 74 | 1 | 1 |
| | | Coronary occlusion | 4 ( 0) | 0 | 0 | 4 |
| | | Orthostatic hypotension | 3 ( 0) | 1 | 0 | 0 |
| | | Rheumatic heart disease | | | | |
| | | without congestive cardiac failure | 2 ( 0) | 0 | 0 | 0 |
| | | with congestive cardiac failure | 1 ( 0) | 14 | 0 | 1 |
| | | Acute bacterial endocarditis | 1 ( 0) | 1 | 0 | 1 |
| | | Adams-Stokes syndrome | 1 ( 0) | 1 | 0 | 2 |
| | | Paroxysmal atrial fibrillation | 1 ( 0) | 0 | 0 | 2 |
| Metabolic disease | 27 | Diabetes mellitus | 13 ( 0) | 5 | 0 | 1 |
| | | Obesity | 11 ( 0) | 0 | 0 | 0 |
| | | Diabetic acidosis | 2 ( 0) | 0 | 0 | 2 |
| | | Gouty arthritis | 1 ( 0) | 0 | 0 | 0 |
| Disease due to physical or chemical agents | 16 | Poisoning due to inhalation of cooking gas | 3 ( 2) | 1 | 2 | 0 |
| | | Aspiration of kerosene | 3 ( 0) | 1 | 0 | 1 |
| | | Foreign body ingestion | 2 ( 0) | 0 | 1 | 0 |
| | | Lye ingestion | 1 ( 0) | 1 | 0 | 0 |
| | | Ingestion of strychnine | 1 ( 0) | 0 | 1 | 0 |
| | | Scopolamine (hyoscine) poisoning | 1 ( 0) | 0 | 0 | 0 |
| | | Chronic dehydration | 1 ( 0) | 0 | 0 | 0 |
| | | Heat stroke | 1 ( 1) | 0 | 0 | 1 |
| | | Ingestion of oil of cloves | 1 ( 0) | 0 | 0 | 0 |
| | | Heat exhaustion | 1 ( 0) | 0 | 0 | 0 |
| | | Bromide intoxication | 1 ( 0) | 0 | 0 | 0 |
| Peripheral vascular disease | 11 | Thrombophlebitis | 7 ( 5) | 11 | 1 | 3 |
| | | Arteriosclerosis obliterans | 2 ( 0) | 1 | 0 | 0 |
| | | Varicosities | 1 ( 0) | 0 | 0 | 0 |
| | | Dissecting aneurysm of aorta | 1 ( 0) | 0 | 0 | 1 |
| Disease of the ductless glands | 2 | Hyperthyroidism | 1 ( 0) | 0 | 0 | 0 |
| | | Hypothyroidism | 1 ( 0) | 0 | 0 | 0 |
| Diseases of blood | 2 | Pernicious anemia | 1 ( 0) | 2 | 0 | 0 |
| | | Sickle cell trait | 1 ( 0) | 0 | 0 | 0 |
| Miscellaneous | 253 | No apparent illness | 168 (23) | 17 | 4 | 0 |
| | | Peridontal abscess | 19 ( 2) | 16 | 0 | 0 |
| | | Dental caries | 12 ( 0) | 1 | 0 | 0 |
| | | Penicillin reaction | 8 ( 1) | 2 | 0 | 0 |
| | | Puncture wound | | | | |
| | | foot | 6 ( 1) | 1 | 0 | 0 |
| | | finger | 1 ( 0) | 1 | 0 | 0 |
| | | Dead on arrival | 6 ( 0) | 0 | 3 | 0 |

TABLE 1.—*Diseases Encountered in 5,781 Home Visits*—Continued

| Type of Disease | Total. No. | Disease Entities Seen on Initial Visit | | No. of Follow-Up Visits for Each Entity | Entities Seen Between Midnight and 8 A. M. | No. of Hospital Admissions for Each Entity |
|---|---|---|---|---|---|---|
| | | Dog bite | 5 ( 0) | 0 | 1 | 0 |
| | | Fever of unknown origin | 4 ( 1) | 4 | 0 | 1 |
| | | Oxytetracycline reaction | 2 ( 0) | 0 | 0 | 0 |
| | | Lymphadenitis | 2 ( 0) | 0 | 0 | 0 |
| | | Ingrown toenail | 2 ( 0) | 0 | 0 | 0 |
| | | Ring stuck on finger | 2 ( 0) | 0 | 0 | 0 |
| | | Foreign body in nose | 1 ( 0) | 0 | 0 | 0 |
| | | Digitalis intoxication | 1 ( 0) | 0 | 0 | 0 |
| | | Lymphosarcoma of arm | 1 ( 0) | 0 | 0 | 0 |
| | | Ventral hernia | 1 ( 0) | 0 | 0 | 0 |
| | | Postoperative (choledochoduodenostomy) care | 1 ( 0) | 2 | 0 | 0 |
| | | Postoperative pain following fingernail excision | 1 ( 0) | 0 | 0 | 0 |
| | | toenail excision | 1 ( 0) | 0 | 0 | 0 |
| | | Pilonidal cyst | 1 ( 0) | 0 | 0 | 0 |
| | | Sulfisoxazole (Gantrisin) reaction | 1 ( 0) | 0 | 0 | 0 |
| | | Laceration of frenum linguae | 1 ( 0) | 0 | 0 | 0 |
| | | Pain secondary to carcinoma of stomach | 1 ( 1) | 0 | 0 | 0 |
| | | Post-tooth-extraction hemorrhage | 1 ( 0) | 0 | 0 | 0 |
| | | Torn fingernail | 1 ( 0) | 0 | 0 | 0 |
| | | Toothache | 1 ( 0) | 0 | 1 | 0 |
| | | Disseminated lupus erythematosus | 1 ( 0) | 0 | 0 | 1 |
| | | Scleroderma | 1 ( 0) | 0 | 0 | 1 |

* The number of visits on Sundays, Christmas, and New Year's Day is indicated in parentheses.

for an average of 11.1 calls each Sunday. A total of 1,890 patients were seen, and 1,684 patients, or 89.1% of the total, were followed up with two or more home visits or by follow-up evaluation after referral to a clinic or after hospitalization. Ten or more visits were made to 82 patients, upon whom a total of 1,379 house calls were made, for an average of 16.8 calls a patient. If those patients with more than 10 calls, and those who had only one visit, are excluded, the average number of visits per patient becomes 2.62, in contrast to the over-all average of 3.06 visits per patient.

The monthly distribution of visits is as recorded in figure 1 and the hourly distribution and necessity of calls in figure 2. Four hundred seventeen visits took 5 minutes or less; 4,151, 10 to 20 minutes; 1,163, 20 to 60 minutes; and 50, one hour or more. The number of visits to patients in each of the chosen age groups is indicated in figure 3, the youngest patient being 8 days of age and the oldest, 101 years old. Since no estimate of the number of patients eligible for care could be obtained, only the absolute morbidity, and not the relative morbidity, could be determined.

A total of 3,440 follow-up calls were made, not including those on hospitalized patients. In 37.0% of patients, the illness was cured; in 31.0%, there was improvement; in 28.6%, there was no change; and, in 3.4%, the condition was worse. Only those follow-up calls that were necessary for the patient's welfare during the year studied are included in table 1; hence they are fewer in number than those indicated above, which include both those visits that were necessary during the year studied and those made after July 1, 1955. On 69 occasions, the final impression differed from the original impression; one third of these changes occurred in patients who originally were felt to have upper respiratory infections but later developed complications. In no instance was there any evidence that any patient's condition was jeopardized when seen by a student alone.

A total of 3,621 cases of 243 separate disease entities were seen. For the sake of completeness, not only the principal diagnosis that prompted the call was entered but each disease entity presented by the patient was included. In entering follow-up visits, however, only the principal illness responsible for the call was entered. One hundred sixty-five hospitalizations were required, and 160 calls were made between midnight and 8 a. m., as indicated in table 1. Although the nature of the notification system precluded availability on an emergency basis, emergency calls occasionally were taken. On six occasions patients were "dead on arrival," each call having been answered within 15 minutes of the time it was received.

Forty-three different drugs were used more than 10 times each (table 2), and 40 miscellaneous drugs, many of which were obtained by prescription and were not urgently required by the patient, were used a total of 122 times (1.5% of the total drug use) and, for the sake of brevity, were excluded from table 2.

## Comment

The seasonal distribution of illness (fig. 1) indicates only a trend in monthly morbidity, which in general has been confirmed by the experience of previous years and which shows the maximum number of calls to be made in late fall and early winter, with the smallest number of calls being made in May and June. This distribution also is in accord with Fry's data [6] for 1949 to 1951. The number of calls was greater than anticipated during the summer months, in part due to the many cases of measles seen during July and August, which skewed the monthly distribution.

As was expected, most calls, 66.2% of the total, were made during the working hours of the day, when all patients who were not acutely ill were seen insomuch as was possible. Thirty-one per cent of the calls were between 5 p. m. and midnight, and 2.8% after midnight.

In the series of Couter and co-workers,[8] 31.7% were seen from 6 p. m. to midnight and 4.7% after midnight, but, in Fry's series,[6] only 4% of 2,758 house calls occurred between 8 p. m. and 7 a. m.

Most visits (71.8%) were completed within 10 to 20 minutes; 20.1% of calls took from 20 to 60 minutes; and 0.9% of calls took 60 minutes or more. Follow-up calls, in which the patient had largely recovered, or calls for the diagnosis and treatment of minor problems represented 7.2% of the calls and were made in five minutes or less. Although 10 to 20 minutes might seem an excessively short time, it was possible because of the concise nature of most problems, both diagnostically and therapeutically, and frequently was necessitated by the large number of calls, 40 or more, made on some days.

TABLE 2.—*Principal Treatment Used in 5,781 Home Visits**

| Specific Treatment | Total No. of Times Treatment Used | No. of Times Treatment Used Between Midnight and 8 A.M. | % of Total Use |
|---|---|---|---|
| Penicillin | 1,214 | 17 | 14.95 |
| Acetylsalicylic acid | 1,168 | 31 | 14.37 |
| Sulfisoxazole (Gantrisin) | 835 | 9 | 10.27 |
| No treatment | 716 | 24 | 8.81 |
| Supportive treatment | 426 | 7 | 5.25 |
| Cough syrup | 422 | 5 | 5.20 |
| Phenobarbital, 15 mg., and atropine, 0.3 mg. | 368 | 9 | 4.53 |
| Digitalis leaf | 357 | 1 | 4.40 |
| Phenobarbital | 329 | 26 | 4.05 |
| Nose drops | 305 | 5 | 3.76 |
| Acetazolamide (Diamox) | 144 | 0 | 1.77 |
| Oxytetracycline | 125 | 0 | 1.54 |
| Acetophenetidin, 150 mg., acetylsalicylic acid, 210 mg., and caffeine, 30 mg. | 120 | 5 | 1.48 |
| Alopectoset | 105 | 1 | 1.29 |
| Phenobarbital, 15 mg., and ephedrine, 50 mg. | 96 | 5 | 1.18 |
| Mersalyl (Salyrgan) | 90 | 0 | 1.11 |
| Reserpine (Serpasil) | 85 | 1 | 1.04 |
| Tripelennamine (Pyribenzamine) | 83 | 1 | 1.02 |
| Sulfadiazine | 80 | 3 | 0.98 |
| Pentobarbital (Nembutal) | 79 | 18 | 0.97 |
| Ammonium chloride | 71 | 0 | 0.87 |
| Sulfadiazine, sulfamerazine, sulfamethazine (triple sulfa) | 70 | 3 | 0.86 |
| Aminophylline (theophylline ethylenediamine) | 68 | 8 | 0.84 |
| Ear drops | 58 | 0 | 0.71 |
| Calcium carbonate, 600 mg., atropine, 0.3 mg., and phenobarbital, 30 mg. | 56 | 0 | 0.69 |
| Diphenhydramine (Benadryl) | 55 | 2 | 0.68 |
| Glyceryl trinitrate (nitroglycerin) | 52 | 1 | 0.64 |
| Meperidine (Demerol) | 42 | 12 | 0.51 |
| Calamine lotion | 39 | 1 | 0.48 |
| Phenobarbital, 30 mg., and theobromine, 300 mg. | 35 | 0 | 0.43 |
| Dimenhydrinate (Dramamine) | 34 | 0 | 0.42 |
| Epinephrine | 33 | 4 | 0.41 |
| Hydralazine (Apresoline) | 32 | 0 | 0.39 |
| Tetracycline | 32 | 0 | 0.39 |
| Digoxin | 21 | 0 | 0.26 |
| Multivitamins | 20 | 0 | 0.24 |
| Chlortetracycline | 19 | 0 | 0.23 |
| Digitoxin | 18 | 0 | 0.22 |
| Oxytetracycline ophthalmic ointment | 18 | 0 | 0.22 |
| Paraldehyde | 16 | 3 | 0.20 |
| Atropine | 16 | 3 | 0.20 |
| Nitrofurazone (Furacin) ointment | 15 | 0 | 0.18 |
| Oxytetracycline ointment | 13 | 0 | 0.16 |
| Isoproterenol (Isuprel) | 12 | 0 | 0.15 |
| Morphine sulfate | 12 | 3 | 0.15 |

* All drugs used 10 times or more are included.
† Composed of kaolin, colloidal aluminum hydroxide, pectin, and betalactose.

It has been said[6] that "too much attention is paid to fields of medicine which the future general practitioner is rarely if ever called upon to practice." Without discussing presently accepted medical curriculums, certain conclusions as to the relative importance of age groups and disease entities in domiciliary, urban medical care are strongly suggested.

The patients seen were subdivided, as closely as was feasible, into age groups, the members of which were felt to be susceptible, in common, to certain disease entities. Patients less than 12 years in age required 57.6% of all house calls. The highest (estimated) rate of morbidity occurred in the group between 6 months and 3 years of age. If the calls to single persons numbering 10 or more per individual are considered, the emphasis on pediatric problems is equally as striking, for 52 of the 82 patients requiring more than 10 visits were pediatric patients, with 750 total house calls. The sharp reduction in the number of calls in the group from 12 to 21 years of age, as compared with the nine-year span of the group from 3 to 12 years of age, is evident from figure 3. The adult group, with a span of 44 years, required only 21.4% of the total visits, whereas patients over 65 years of age were seen on 13.5% of all visits, emphasizing the relative importance of geriatric medicine. Many of the visits to patients over 65 years of age were for chronic illness, requiring repeated follow-up care. Of the 783 visits to persons over 65 years of age, 541, or 69.1%, were made to 24 persons who required 10 or more visits, whereas of 1,237 adult-patient visits only 6 patients were seen a total of 10 or more times, with a total of 88 visits, or 7.1% of the total visits in that group. In the series of Backett and co-workers,[7] 34.9% of 5,591 home visits were to patients under 14 years of age, whereas 25.6% of the visits were to those over 65 years of age. It should be stressed, however, that a higher proportion of the work of caring for the children and elderly is carried out at home,[7] which influences the over-all importance of these groups in this series.

Female patients constituted 56.0% of all patients seen, compared with 57.5% in Backett's, 55.5% in Fry's and 65.5% in Couter's series. In this series, however, the only significant sex difference was seen in the adolescent years, where the female-male ratio was 1.98:1, and the adult years, where the ratio was 2.30:1. This sex difference cannot be explained by a preponderance of obstetric or gynecologic conditions, because of the relative paucity of such disease seen on initial or follow-up visits. It is our impression, however, that the vast majority of psychoneurotic states were seen in women, which contributed significantly to the increased number of women seen.

The disease entities seen were dominated by ear, nose, and throat conditions (40.9% of the initial visits, and 36.9% of all follow-up work), with the majority of such conditions being in the pediatric age group. Patients with gastroenteritis, "grippe," and psychoneurotic states frequently were seen. Disease of the skin, most of which was of a minor nature, was the fifth largest diagnostic category seen and emphasized the

importance of dermatology in domiciliary medicine. Although the total number of patients with diseases of the cardiovascular system seen initially was low, cardiovascular follow-up work comprised 17.9% of all follow-up work and chiefly was work with elderly patients. The designation "no apparent illness" was applied to 4.6% of all conditions seen on the initial visits, for findings such as physiological variants, pediatric feeding problems, and checkups. The night calls (table 1) included a wide variety of conditions, dominated by ear, nose, and throat and neuropsychiatric disease.

Although we deplore the indiscriminate use of antibiotics,[10] the single drug used the most was penicillin. If acetylsalicylic acid and acetylsalicylic acid, acetophenetidin, and caffeine (APC) tablets are considered together, however, their use exceeded that of penicillin. The preponderance of the use of acetylsalicylic acid, phenobarbital, atropine, and supportive therapy was ascribed to the large number of cases of upper respiratory infections, nonspecific gastroenteritis, and "grippe" that were seen. No treatment was used 716 times, but many of the patients given no therapy were referred to hospital emergency rooms or clinics. Penicillin and sulfisoxazole were used chiefly in the treatment of otitis media and tonsillitis, and broad-spectrum antibiotics were used when indicated. The use of antibiotics for colds and grippe specifically was avoided. In the 698 cases of these conditions, antibiotics were used in only five patients, four of whom had mitral valvular disease, or congenital heart disease. In those 698 cases, 532 patients (76.2%) were listed as recovered and 23 (3.3%) went on to develop complications, principally otitis media, tonsillitis, and bronchopneumonia, which were treated with appropriate therapy. One hundred forty-three patients (20.5%) were not followed but can be presumed to have recovered, since no repeat call for care was received. The high incidence of recovery, with only symptomatic therapy, even in the presence of poor socioeconomic conditions, serves to emphasize the efficacy of refusing to administer antibiotics to such patients. It is of interest that there was a wide diversity of treatment used after midnight, and the most frequently used drugs were acetylsalicylic acid and phenobarbital. Narcotics were used on only 15 occasions (9.4%), in contrast to the 40.0% of 200 night calls in which Forbes found morphine to be necessary.[9]

The majority of patients were cured or improved on follow-up visits. Of those patients whose condition was felt to be unchanged (28.6%), 457 visits were to those in the elderly, chronically ill group, in which repeated follow-up visits were necessary. If this group is excluded, then only 15.3% of those patients in whom improvement might have been expected showed no change. Hospitalization was necessary once in every 35.0 visits. This result compares with 22.7% of the acutely ill patients in Couter's series (one in every 4.4 visits) who needed hospitalization.

Finally, mention should be made of the lack of necessity for certain home visits. Despite poor socioeconomic conditions, lack of screening of calls, and the psychological impact of presumed illness, it is irrefragably true that some patients did not require medical attention and that many more could easily have been seen at the available clinics. This impression is substantiated by a consideration of the diagnostic entities: the large number of upper respiratory infections seen, the substantial number of calls for skin disease, and the 168 calls for "no apparent illness." Also, there was surprising uniformity in the determined necessity for house calls, which was 46.0% during the day, 48.5% in the evening, 64.4% at night, and 54.2% on Sundays. The problem of the triviality of complaints in England has been mentioned by Stevenson,[11] who says that "Ninety-eight per cent of . . . doctors questioned stated that patients came to them with trivial complaints more often than before the National Health Service," but Roberts[12] notes that "demands upon physicians for trivial complaints, . . . are made only by a few." This problem also exists, however, in "private" practice, for Couter and his co-workers note that 24.9% of their patients "could easily have been seen in the office," and Forbes states that, of his 200 calls at night, "twenty-two were clearly not necessary."

## Summary

In analyzing the results of 5,781 home visits made during a one-year period, it was found that over half of the visits were to pediatric patients and that a wide variety of illness was seen, predominated by ear, throat, and respiratory afflictions. The majority of patients were treated successfully at home. Approximately one-half of the calls were made for patients who did not require a home visit.

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# CLINICAL NOTES

## CALCULUS FORMATION AND URETERAL COLIC FOLLOWING ACETAZOLAMIDE (DIAMOX) THERAPY

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Of the numerous drugs that have been introduced into clinical medicine within the last three years, the substance acetazolamide (Diamox)[1] is unique in a number of ways. This substance, a heterocyclic sulfonamide, acts as a diuretic because of its property of inhibiting the enzyme carbonic anhydrase. By exerting its action in the kidney tubule, acetazolamide blocks rapid equilibration between tubular sodium bicarbonate and intracellular hydrogen ion, preventing acidification of the urine and allowing excretion of sodium bicarbonate together with large quantities of water. Due to a yet unknown mechanism,[2] the secretion of aqueous humor is also inhibited by acetazolamide, and the drug has found widespread use in combating glaucoma. Reports have been uniformly favorable on the relative mildness of and infrequency of side-effects from the drug, even when administered over long periods of time. Urologic complications have been virtually negligible. In a series of cases reported by Becker,[3] only one individual was said to have experienced ureteral colic, and an additional report[4] describes the occurrence of ureteral calculus in one individual. For this reason, it seemed highly significant to us that we should encounter within a relatively short period of time the following three cases of urinary complications attendant upon the use of acetazolamide.

### Report of Cases

Case 1.—A 46-year-old man was admitted to University Hospitals on Oct. 10, 1955, with the chief complaint of pain of 24 hours' duration in the left flank. The pain was sudden in onset, colicky, and associated with nausea and vomiting; it was relieved by administration of meperidine (Demerol), 100 mg., but recurred in several hours. There were no urinary symptoms. No gross hematuria was noted. The patient had been on therapy with acetazolamide, 250 mg. four times a day, for five months because of bilateral glaucoma. On admission, the patient had tenderness of the left flank. The urine contained only a few red blood cells and white blood cells. An x-ray of the kidney, ureter, and bladder suggested a small stone at the left ureterovesical junction. Pyelograms revealed moderate hydronephrosis and hydroureter on the left. Urinary pH ranged from 6.0 to 6.5. The remainder of the laboratory examinations were essentially normal, except for an elevated serum chloride level of 113 mEq. per liter and a slightly depressed carbon dioxide–combining power of 18 mM per liter. At cystoscopy a stone was easily extracted from the left ureter. Postoperatively, therapy with acetazolamide was discontinued until increasing intraocular tension necessitated its resumption. There has been no recurrence of urinary calculi since the resumption of therapy.

Case 2.—A 46-year-old man with essential hypertension and glaucoma was given acetazolamide as an adjunct to treatment of glaucoma from February, 1954, to November, 1955. The dosage varied from 250 to 500 mg. daily, except during a one-month period in November, 1954, when he took 750 mg. a day. Attention was first attracted to the urinary tract by some ureteral colic on the right in June, 1954. Three faintly opaque shadows were shown to be in the terminal part of the right ureter by urograms. Fragments of gray-white powdery stone were caught in a ureteral basket, and the remainder passed spontaneously. The material was not analyzed at that time. The urine was sterile, the pH was 5.5, and blood chemistry determinations were normal. On the assumption that the stone was calcium phosphate, the patient was instructed to increase his fluid intake and to limit his consumption of dairy products sharply. He developed ureteral colic on the left in January, 1955, and passed one stone that was found to contain calcium and phosphorus. A second stone was removed that month with a looped catheter. The urine remained sterile, acid, and free of crystals. Two white stones were passed without pain or hematuria in the summer of 1955. Qualitative analysis of one of these showed calcium phosphate.

Case 3.—A 63-year-old woman entered the hospital with the chief complaint of pain of 24 hours' duration in the left flank. The pain was colicky in nature, radiated into the left groin, and was associated with nausea and vomiting. Gross hematuria was noted shortly before admission. There was an associated urgency and frequency. Urinalysis revealed 10 to 12 red blood cells per high-power field. Urinalysis on admission showed an alkaline reaction. There was no evidence of acidosis. Approximately two weeks prior to admission, the patient had been placed on therapy with acetazolamide, 250 mg. four times a day, because of bilateral glaucoma. Physical examination revealed marked tenderness of the left flank. Excretory urograms showed delayed excretion on the left, with dilatation of the visible portion of the ureter. At cystoscopy, although no stone was found, there was marked edema and hemorrhage of the ureteral orifice. Repeat urograms after a period of ureteral catheter drainage showed a normal pelviocalyceal system and ureter. Presumably the patient had passed a small calculus that was not recovered.

### Comment

The implied connection between the administration of acetazolamide and the development of the stones described above is of particular interest in the light of the experimental work of Harrison and Harrison.[5] These authors describe a marked decrease of citrate excretion in rats treated with acetazolamide and the accompanying deposition of calcium phosphate in renal tubules and pelvis. They assume with Shorr and others[6] that urinary citrate aids in maintaining calcium in a soluable complex and that low citrate levels in the presence of normal calcium-phosphorus ratios may be the cause of calcium phosphate precipitation. The alternative explanation is that alkalinization of urine by the effect of acetazolamide on renal acid-base balance is responsible for stone formation. This appears less likely in view of the fact that measurements on two of our three patients showed excretion of acid urine (pH 6.5 and 5.5).

That the complication seen in these three cases is of rare occurrence is attested to by the failure of its appearance in large series of cases. Leopold,[7] however, has similarly seen two cases of calcium phosphate stones in patients receiving this drug. With prolonged use of this effective drug, therefore, it may be seen more frequently. There are several possible therapeutic adjuvants to prevent this serious side-effect. If the role of citric acid is the significant one suggested by Harrison[5] and Shorr,[6] then agents that increase the excretion of citric acid should be used together with acetazolamide. There is the additional possibility of

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using other complexing agents whose excretion may not be affected by acetazolamide to carry calcium into solution. The lack of precipitation of calcium phosphate stones in rats on low-phosphate diets [5] suggests prevention by dietary control. In diametric opposition is the classic treatment by urinary acidification. Choice between these methods of therapy will have to be made by further observation and experimentation.


### Summary

Urinary calculi and ureteral colic developed in three patients who were receiving acetazolamide (Diamox). Since alkalinization of urine did not occur, it is possible that suppression of production of citrate, a calcium-complexing substance, was the casual mechanism.


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## PNEUMATOSIS INVOLVING THE LEFT SIDE OF THE COLON


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and

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Pneumatosis coli has been defined as emphysema of the colon in which intramural pockets of gas are found in the colonic wall and occasionally even in the mesentery. Various names have been utilized to describe this condition—pneumatosis cystoides intestinalis, pseudocysts, gas cysts of the intestine, and intestinal emphysema. Two forms have been described: (1) primary, in which there is diffuse involvement of the colonic wall and mesentery existing without apparent cause, and (2) secondary, in which there are subserous cystic collections of gas usually in association with other disease such as peptic ulcer or carcinoma of the stomach. The primary form is rare. Most cases seem to be associated with two common factors, namely, ulceration of mucous membranes and obstruction of the alimentary tract. Most of the cases in the literature have reported involvement of the small intestine and right side of the colon.[1] In a review of 213 cases of pneumatosis cystoides intestinalis from the world literature, only 40 cases of colonic involvement were reported. Of these, only 13 affected solely the large intestine and its peritoneal attachments.[2] In 1952, one of us (R.H.M.) reported a case with left-sided pneumatosis coli, which probably developed after sigmoidoscopy and biopsy, and it was suggested that this procedure might have been an etiological factor.[3] It is the purpose of this paper to present three additional cases of left-sided pneumatosis coli with comments on the relationship to sigmoidoscopy, the roentgen findings, and the follow-up studies of these patients.

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### Report of Cases

Case 1.—A 55-year-old woman, with rectal bleeding of three weeks' duration, was admitted to the hospital for study. She had had an appendectomy 25 years previously. The remainder of her history was noncontributory. On physical examination, she appeared well nourished and presented no significant physical abnormalities except for internal hemorrhoids. Sigmoidoscopy disclosed a granular-appearing mucous membrane in the region of the rectosigmoid, and biopsy was done. No polyps or further sources of bleeding were encountered. When the sigmoidoscope was removed, the patient experienced severe, diffuse abdominal pain. The abdomen was moderately tense, with tenderness in the region of the descending colon. The sigmoid could be palpated as a doughy mass. Barium enema examination revealed findings typical of pneumatosis coli, involving the sigmoid and extending proximally to the distal transverse colon. The remainder of the large intestine was normal. No free air was demonstrated in the peritoneal cavity (fig. 1). The patient's symptoms persisted for a week and then slowly subsided. Repeated roentgen studies during the past four years have revealed no change in the colon. The patient is well.

Case 2.—A 58-year-old male was studied because of a chief complaint of painless hematuria of several days' duration. Of significance in his history was a hemorrhoidectomy performed four years previously. He had not had a previous roentgenologic examination. Physical examination disclosed a well-nourished man in no distress, with no pertinent positive physical findings. Routine laboratory work revealed no significant abnormal findings save for fresh red blood cells in the urine. Proctoscopy to 7 in. was negative. No biopsy was performed. Four days later, an intravenous pyelogram was taken, and it revealed the presence of a filling defect within the bladder lumen, which proved to be a benign papilloma. On these roentgenograms, a grape-like cluster of gas shadows was noted occupying the midabdomen (fig. 2*A*). On subsequent roentgen study, these shadows were situated in the left upper quadrant (fig. 2*B*) and then in the right lower quadrant. Barium studies of the stomach and small intestine were normal. Barium enema examination demonstrated alterations in the sigmoid characteristic of pneumatosis coli. The mesentery of the sigmoid was elongated. A second area with less marked changes was seen in the splenic flexure. The remainder of the colon was normal (fig. 2*C*). Roentgen studies three months later showed the lesions still present and unchanged.

Case 3.—A 52-year-old man was admitted to the hospital with the chief complaint of bright-red rectal bleeding. Of significance in his history was an appendectomy performed several years previously and a recent barium enema that revealed no abnormalities. Physical examination and laboratory data were noncontributory. Sigmoidoscopy revealed a polyp at 6 in. from the anus, which was removed. A subsequent barium enema disclosed pneumatosis coli involving the left side of the colon and extending into the mesentery (fig. 3). Follow-up studies six months and two and a half years later revealed no change in the roentgen findings. The patient has been well and asymptomatic.

Case 4.—A 56-year-old woman, complaining of alternating diarrhea and constipation of nine weeks' duration, entered the hospital for study. The history, physical examination, and laboratory data were noncontributory. Barium enema revealed pneumatosis coli involving the distal transverse colon and splenic flexure (fig. 4). No other definite cause was found for the patient's complaints. Clinically her symptoms have remained unchanged.

## Etiology

Many theories as to the etiology of pneumatosis coli have been advanced. The prevailing concept is that the cysts are, in fact, lymph channels distended by gas. The neoplastic theory, in which the gas originates from gas-forming tumor cells, has been discarded. The bacterial theory, based on gas-forming organisms invading the colonic wall, producing intestinal emphysema, has not been substantiated. In hogs that are fed a diet of polished rice or one deficient in corn, intestinal emphysema can be experimentally produced. This work has suggested the concept of a dietary deficiency as an etiological factor in the disease. Masson considered this condition to be due to lymph stagnation in tortuous or obstructed lymphatic channels, resulting from local alterations in acid-base balance, with subsequent release of gases into the lymphatics. This could be related to the dietary deficiency theory.

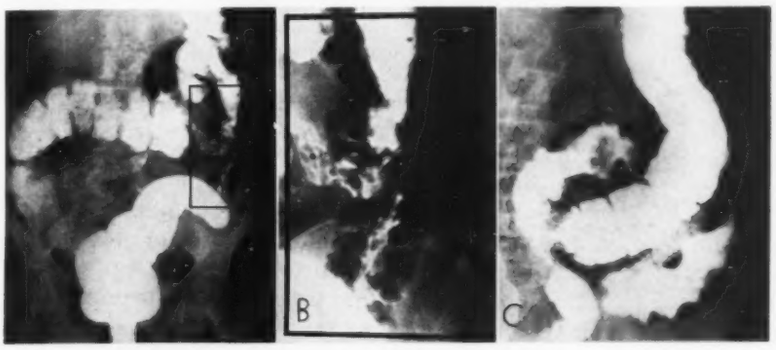


Fig. 1.—Barium enema one day after sigmoidoscopy and biopsy. *A*, multiple intramural gas pockets along course of distal transverse and descending colon, which irregularly compromise the colonic lumen. *B*, close-up of most marked involvement. *C*, oblique projection demonstrating coarse, irregular scalloping of luminal contours by gas cysts.

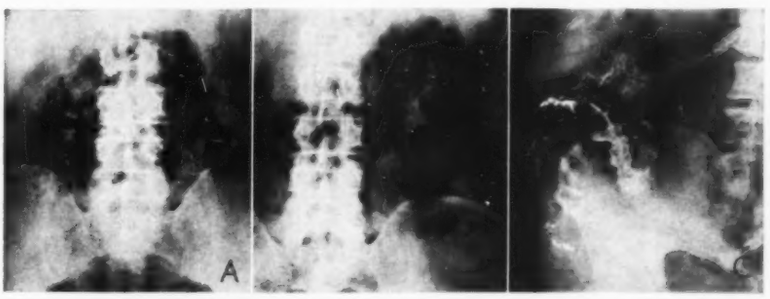


Fig. 2.—*A*, large grape-like cluster of gas shadows in midportion of abdomen. *B*, several days later gas shadows are in left upper abdomen. *C*, barium reveals gas shadows lying in wall of sigmoid, mesentery of which is elongated.

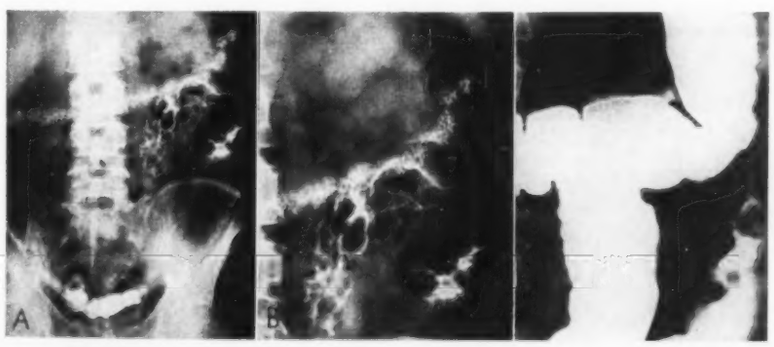


Fig. 3.—*A*, postevacuation film of barium enema showing pneumatosis involving only sigmoid colon and its mesentery. *B*, close-up demonstrating gas cysts, with alterations in contour and mucous pattern of sigmoid. Gas cysts extend into mesentery of sigmoid. *C*, close-up of barium-filled sigmoid.

The mechanical theory is based on the theory that most of these cases are associated with a mucous membrane defect and obstruction somewhere in the gastrointestinal tract. Most cases of pneumatosis cystoides intestinalis involve the small intestine and are usually associated with ulcerative and obstructive disease in the stomach or duodenum. It has been suggested that the gas under pressure is forced along the lymphatics into the small intestine and mesentery, thus accounting for the localization distant from its site of origin. In cases of pneumatosis involving the ileocecal region, it has been conjectured that there may be an associated lesion in the appendix. So-called primary pneumatosis, in which there is no demonstrable cause, usually involves this region.

Few cases of left-sided colonic involvement have been described, and there has been little consideration of the possible mechanisms of its production. Note has been made of five cases of left-sided pneumatosis coli recently reported in the literature. These cases were reviewed to determine the possible role of trauma in the production of pneumatosis. In two of these cases, sigmoidoscopy was performed prior to the onset of the pneumatosis, and, in one of these, a biopsy of the mucous membrane was performed.[4] In the latter case, barium enema on the day of biopsy revealed no evidence of pneumatosis coli; however, one week later, the lesion was present. The patient was operated upon and the diagnosis confirmed. In the third case, the disease may have antedated sigmoidoscopic examination,[5] and, in the fourth, sigmoidoscopy was not performed.[6] In the fifth case, the onset appeared to be acute after rectal surgery.[7]

Three of the four patients described in this report had pneumatosis involving the sigmoid. In all three cases sigmoidoscopy was done and in two biopsy. These patients were well nourished and had no significant diseases. The relationship between sigmoidoscopy and the anatomic site of the pneumatosis is striking. Since most cases of pneumatosis involving the small intestine and right side of the colon are considered to be secondary to an ulcerative and obstructive lesion of the stomach, it may follow that the trauma of sigmoidoscopy, with and without biopsy, is responsible for the production of pneumatosis of the left side of the colon. The fourth patient had pneumatosis localized to the splenic flexure of the colon. There was no known antecedent traumatic episode, sigmoidoscopy, or associated disease. The explanation of the location of the pneumatosis in this case is elusive, and it may represent one of the rare instances of primary disease.

### Pathology

The disease is characterized by the presence of gas-containing cysts in the submucous or subserous layers of the colonic wall. When they are subserous, they tend to be more discrete and occur in clusters like a bunch of grapes. They may vary considerably in size and be spherical and sausage-shaped. The colonic wall is greatly thickened and feels crepitant. The lumen may be narrowed by the intramural collections of gas. Microscopically, greatly dilated subserous or submucous spaces are seen lined with endothelium. On occasion, giant cells are seen, but there is generally no evidence of a severe inflammatory process. The mesentery may show similar changes.

### Roentgen Findings

Because there are no specific clinical or laboratory findings to indicate the presence of a left-sided pneumatosis coli, the most useful diagnostic aid is roentgen study, and, indeed, the disease often is found unexpectedly. There have been several discussions of the roentgen findings in the literature [8]; however, few cases of left-sided pneumatosis have been described, and, in several of the cases reported, the diagnosis was not made radiographically. It seems warranted, therefore, to reevaluate the roentgen criteria for this diagnosis.

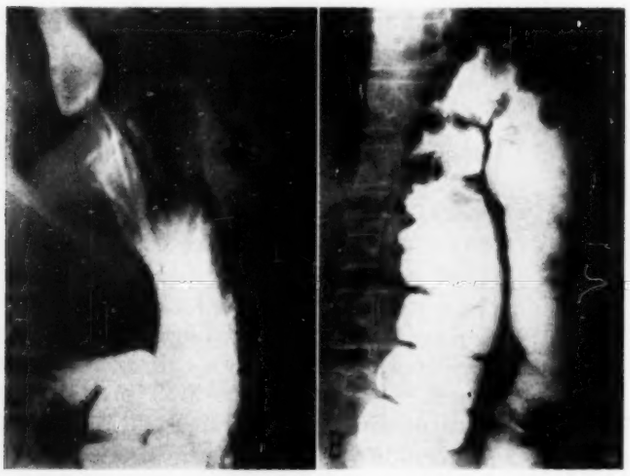

Fig. 4.—*A*, on gastrointestinal series, gas cysts along splenic flexure of colon, lateral to gastric fundus, are seen. *B*, intramural gas cysts in splenic flexure of colon confirmed by barium enema study.

A preliminary film of the abdomen revealed, in one patient, a grape-like cluster of air shadows that shifted position within the abdominal cavity. The nature of these alterations was obscure until a barium enema showed these to be gas cysts along the course of the sigmoid, the mesentery of which was elongated. In the three other patients, gas pockets along the course of the descending and sigmoid colon, as well as in the mesentery, were seen, and their true nature could be suspected. In none was there evidence of pneumoperitoneum.

The alterations are best visualized utilizing barium studies of the colon. Discrete lucent areas lie adjacent to the intestinal lumen and indent its contours. These defects are variable in size and, when large, may compress the lumen and offer some obstruction to the flow of the contrast material. The barium column may then appear as a thin, irregular streak in the middle of the lumen, bounded on either side by air pockets that alter its course and compromise its caliber. The colonic segments involved by pneumatosis may not be continuous. In one case, the sigmoid and splenic flexure were affected, with a normal intervening colonic segment. The changes may extend into the mesentery, radiating out from the colon in a linear fashion. Unless the gas cysts are recognized as such, the condition may be confused with polyposis, ulcerative colitis, or carcinoma.

### Clinical Findings

In left-sided pneumatosis coli, there are no distinguishing complaints or clinical findings. The diagnosis must be made by radiographic or surgical means and is generally found in the course of study for unrelated conditions. Because of the absence of symptoms in our patients, no treatment has been necessary. This is in contrast to pneumatosis elsewhere in the gastrointestinal tract, where the symptoms calling attention to its presence may be caused by complications of the disease, namely, obstruction and perforation. In follow-up studies, no changes in the roentgen appearance of the colon from those noted at the initial study were observed. The disease has remained stationary.

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Dr. Harry A. Solomon gave permission to report case 2.

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## EFFECT OF A PHENYLALANINE-RESTRICTED DIET ON PATIENTS WITH PHENYLKETONURIA

### CLINICAL OBSERVATIONS IN THREE CASES

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Some interest has been aroused recently in the possibility that patients suffering from phenylketonuria (phenylpyruvic oligophrenia), a condition in which mental deficiency is associated with an inherited abnormality in the metabolism of phenylalanine, may be benefited by giving them a diet deficient in phenylalanine. Bickel and others,[1] Armstrong and Tyler,[2] and

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Woolf and others [3] all have reported improvement in the behavior of patients administered a phenylalanine-restricted diet for extended periods of time. The major biochemical abnormalities in all the patients studied were found to disappear when the high blood levels of phenylalanine, which are characteristic of the disorder, were reduced to the normal range by the dietary regimen. The nature of the mental deficiency is such that it has been difficult to determine whether there has been a significant improvement in mental functioning along with the behavioral improvement. This difficulty is readily appreciated in the assessment of the effect of the diet on older patients. Observations described in one of the previous reports were suggestive that better success in maintaining good mental development might be dependent upon early diagnosis and treatment before permanent mental damage occurred.[2b] It has been suggested by the authors cited and editorially [4] that further studies along these lines are needed.

This paper reports the clinical observations made on three phenylketonuric children, ages 4½ years, 4 years, and 8 weeks, respectively, in the course of dietary treatment. Considerable improvement in the behavior of the two older children has been observed after 10 months of treatment, but it has been difficult to obtain objective evidence of improved mental ability. The infant, on the other hand, after seven months of treatment, shows no sign of the mental, neurological or physical abnormalities to be expected in a case of phenylketonuria.

## Report of Cases

Case 1.—A 4-year-old boy, born Dec. 28, 1950, was first seen on Jan. 20, 1955, with the referral complaint of being unable to talk. His history revealed a normal puerperium, birth, and neonatal course. There was no family history of nervous or mental disease. A sibling, 2 years of age, was in good health. This patient's early development was not remarkable. He held his head erect when 4 weeks old, rolled over when 3 months old, and sat alone when 6 months old. He did not stand until he was 14 months old, but he walked at the age of 16 months and ran at the age of 2 years. He did not climb stairs until he was 3 years old. His speech was extremely retarded, and he said only a few words at the age of 4. At the age of 2 years, the patient was thought to be retarded in his activities. He showed no interest in other children, in playing with toys, in feeding himself, or in toilet training. During the next two years, he improved very little and became wild, restless, and completely uncontrollable in his actions.

At the time of the initial examination he weighed 45 lb. (20 kg.) and was 41 in. (104 cm.) tall (75th percentile). He was an attractive, ruddy-complexioned, red-haired male. The child displayed tremendous hyperactivity, refusing to sit still and showing only fleeting interest in objects about him. His only vocalization was a continual hissing noise. The general physical examination was normal. A detailed neurological examination was impossible; however, the deep tendon reflexes of the lower extremities were hyperactive. The only positive laboratory finding was in the ferric chloride test on the urine, which produced the green color characteristic of phenylketonuria. The serum phenylalanine level was found to be 38 mg. per 100 cc. (normal range 2 to 5 mg. per 100 cc.). Psychologically, the patient was regarded as untestable. He was helpless to understand or follow through the simplest problem. No effort to control or direct his activities was successful.

*Progress While Receiving a Phenylalanine-Restricted Diet.*—The child was placed on a phenylalanine-free diet Feb. 15, 1955. The urinary ferric chloride test became negative after 10 days, and the serum phenylalanine level reached 3 mg. per 100 cc. after three weeks. At this time, protein was added to his diet as described.[2b] Since that time, his serum phenylalanine level has been maintained within the normal range. His mother reported encouraging progress within a few weeks after the diet was started. He began to display an interest in pictures, television, and in playing with his younger brother. He no longer soiled himself and was becoming easier to handle in the household. When seen five weeks after the diet was begun, he readily permitted examination and showed an interest in the examiner and objects about him. Psychologically, he was still untestable but showed some insight and interest in the testing procedures. In addition, he was using several words. After four months of dietary treatment, he showed considerable purposeful acting and a great increase in vocabulary. He remained extremely hyperactive but showed a lively interest in all that went on about him.

A significant change was noted after eight months of treatment. He was very cooperative in a testing situation. With considerable interest, he gave a doll a bath, arranged play furniture purposefully, and named most of the common pieces of household furniture. He spoke in conversational sentences and asked simple but correctly constructed sentences. For the first time he was readily scoreable at a level of 31 months (age 5 years, I.Q. 52) on the basis of positive achievement. The patient is continuing to receive the phenylalanine-restricted diet.

Case 2.—A 4-year-old girl was first seen Nov. 1, 1954, with a history of "convulsive disorder" and "cerebral palsy." She was born July 13, 1950. Puerperium and birth were normal. Family history was not significant. Her parents and a 2-year-old brother were well. The parents dated the onset of her illness to the first year. Her development had been slow; she rolled over at one year of age, sat alone after one year, stood alone at 2 years, and walked shortly thereafter. She did not use single words until she was 4 years old, and never had been continent of urine or stool. Her only words were "mamma," "dada," and "bye-bye." In December, 1951, she had several generalized convulsions, with loss of consciousness. In April, 1952, she was placed on anticonvulsant therapy after an electroencephalogram revealed "abnormal focal slow waves with paroxysmal element strongly suggesting prominent epileptogenic lesions in the left temporal region." The seizures were completely controlled on phenobarbital therapy.

Physical examination revealed that the girl weighed 32 lb. (14 kg.). She was a reddish-blond, dull-appearing child, with an open, drooling mouth and a slightly brachycephalic head. Her play was boisterous and erratic, and she made many inarticulate squeals and grunts. When approached, she began to scream, kick, and squirm. Examination was difficult and nonrevealing, except for dental caries and hyperactive deep tendon reflexes. On leaving the examining room, she ran wildly and aimlessly up and down the clinic halls. Skull x-rays were negative. An electroencephalogram revealed right parietal occipital spike waves, but the entire record was one of moderately deep sleep due to heavy chloral hydrate sedation. A green color developed when ferric chloride was added to the acidified urine. The serum phenylalanine level was 32 mg. per 100 cc. Psychological consultation confirmed the diagnosis of a severely retarded child, integrated at the level of 2 to 2½ years, who behaviorally was untestable because her attention span was limited to several seconds on any one stimulus.

*Progress While Receiving a Phenylalanine-Restricted Diet.*—A phenylalanine-restricted diet was started March 18, 1955. Two and one-half weeks after starting the diet, the patient was much quieter and would sit on a chair and look at a magazine for 10 to 15 minutes at a time. Her mother stated she slept better, played better with children, obeyed some commands, and was attempting to copy dishwashing activity. Phenylketonuria was not present, and the serum phenylalanine level was 4 mg. per 100 cc. A repeat electroencephalogram on April 5, 1955, revealed a disappearance of the previously noted spike waves, but, with arousal from sedation, an occasional asymmetric spike wave was seen in the parietal areas, primarily on the left. Anticonvulsant therapy was then discontinued. On April 9, 1955, 5 gm. of food protein was added to the diet. One month after the diet was begun, her mother made the following statements: "She came in from the outside while playing, took down her pants and went to the pot herself. She does not wear me out when we come to the hospital."

When the patient was seen after six weeks of dietary treatment, her behavior was considerably improved. In the waiting room, she was content to sit at the play table and play with the peg board. She readily permitted examination and seemed interested in the proceedings. She used such words as "car," "lights," "kitty," "bottle," "good girl," and "bus." When seen by the psychology department, after 10 weeks of treatment, she performed simple tests and had a scoreable I.Q. of 50 (mental age, 28 months). Five and six months after the start of the diet, she was imitating more, putting two words together, attempting to dress herself, and in general manifesting more purposeful activity.

In November, 1955, she was still somewhat hyperactive, although her attention span was noticeably longer. She dressed herself, except for lacing her shoes, and put three words together. Psychological testing revealed a mental age of 31 months and an I.Q. of 49. The serum phenylalanine level was 5 mg. per 100 cc. She is being maintained on a phenylalanine-restricted diet and will continue to be observed.

Case 3.—The infant brother of the patient in case 2 was born Feb. 4, 1955. Puerperium and birth were uncomplicated. The family history was known. Examination at birth revealed a healthy male infant weighing 7 lb. 7 oz. (3,370 gm.) and 20 in. (51 cm.) in length, with an occipital frontal circumference of 13 in. (33 cm.) While in the newborn nursery, his urine was tested on two occasions with ferric chloride and yielded negative results. When seen at 5½ weeks of age, while receiving an evaporated milk formula, he weighed 10 lb. 5.5 oz. (4,694 gm.) and his length was 22 in. (56 cm.). Ferric chloride, when added to the acidified urine, gave a questionable, transient green color. On March 29, 1955, when the infant was 7 weeks and 4 days old, physical examination was normal; however, when ferric chloride was added to his urine, a definite green color developed. The serum phenylalanine level was 55 mg. per 100 cc. Psychological estimates and neurological examinations were entirely within the normal range. An electroencephalogram was within normal limits for his age, with a dominant frequency of 3 to 5 per second. A phenylalanine-restricted diet was started April 4, 1955, when the patient was 2 months of age.

*Progress While Receiving a Phenylalanine-Restricted Diet.*—After three days, the serum phenylalanine level was decreased to 22 mg. per 100 cc., and, after 18 days, it was reduced to 4 mg. per 100 cc. Three weeks after the diet was started, normal protein in the form of 70 ml. of cow's milk was added each day. At the age of 3 months, he weighed 15 lb. 9 oz. (5,471 gm.) and his length was 25.5 in. (63 cm.). He reached for objects, grasped them, and put them in his mouth. He rolled over both ways and was getting up on his hands and knees. Physical examination again revealed a sociable, happy, healthy infant. By 8 months of age, he had two teeth, was alert, responsive, sat alone, pivoted in the prone position, held two cubes, secured a ring by the string, laughed, produced single-syllable sounds, and held his feeding bottle. Physical examination was unremarkable, with weight 17 lb. 1.5 oz. (7,760 gm.) and length 26 in. (66 cm.). At 9 months of age the patient was able to pull himself up in the crib and walk with hands supported. He is continuing to develop at the upper normal levels in all areas for his age. He is being maintained on the phenylalanine-restricted diet, which is being supplemented with 2.0 to 2.5 gm. of natural protein daily. The serum phenylalanine levels have remained at 4 mg. per 100 cc. or less on each determination. His mother states his development compares with that of his unaffected older brother rather than his affected older sister.

## Comment

The observations made on the two older patients are in general agreement with those reported earlier by Armstrong and Tyler.[2a] Both children displayed a rather striking improvement in behavior, but here, as in cases reported earlier,[2b] an objective measurement of a relative improvement in mental ability—as differentiated from the behavioral changes—was difficult to assess. While on the diet, both children became psychologically testable. Whether or not definite mental improvement had occurred, a very tangible result was an improvement in the total family situations, an event that gave both sets of parents considerable satisfaction. The infant in whose case diagnosis was made and a phenylalanine-restricted diet given before the appearance of any clinical signs of abnormality has continued to develop in an apparently normal fashion. The early diagnosis and treatment in this case were possible because of the known family history.

## Summary

Three patients with phenylketonuria were treated with phenylalanine-restricted diets. The serum phenylalanine levels were lowered to and maintained near the normal range. The two preschool children have been treated for 10 and 9 months respectively. These children are showing objective improvement in behavior and have become psychologically testable. The electroencephalogram was normal in one child and abnormal in the other; the electroencephalogram of the latter child returned to normal after the dietary program was instituted. A newborn sibling of one of these children has been followed since birth and was placed on a dietary regimen when the urinary ferric chloride test became positive when the child was 8 weeks of age. The infant shows normal motor and mental development, and no signs of abnormality have been detected.

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Merck & Co., Inc., Rahway, N. J., furnished the phenylalanine-free basal mix used throughout these studies.

Marvin D. Armstrong, Ph.D., Laboratory for the Study of Hereditary and Metabolic Disorders, University of Utah College of Medicine, Salt Lake City, collaborated in this study by assisting in the preparation of diets and by performing the analytical determinations on blood and urine from the patients. This research was supported, in part, through a research grant from the United States Public Health Service.

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# UNUSUAL HEMOLYTIC TRANSFUSION REACTION WITH RENAL FAILURE TREATED BY HEMODIALYSIS

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During the past 10 years various techniques of blood dialysis have been studied and used in many of the larger medical centers in this country.[1] The results of these trials have been extensively reported by many

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authors, and some very large series of treatments in man have been assembled. Reports from abroad, including the original clinical work of Kolff [2] and the studies of Alwall,[3] have been of great interest. In most cases the equipment necessary has been large, heavy, and expensive, and its lack of portability has required that the patient be moved to a medical center large enough to maintain such a treatment service. Increasing experience with such techniques seems to indicate that they are of value in a number of clinical situations other than renal failure,[4] for which use they were first popularized.

In 1942, one of us (A.E.M.) designed several styles of blood oxygenators, based on the use of membrane for bounding the blood and allowing the transfer, by diffusion, of respiratory gases to and from the blood in the manner of the gills of a fish. This designing was done in a military environment, and thus the need for portability and compactness in such equipment was stressed. It was also apparent that a very large membrane surface must be provided in such an apparatus because of the relatively small transfer of gases across the available membranes. This consideration placed emphasis on very compact arrangements for the use of such a membrane interface, not only so that the total size of the apparatus might be within reason, but also for the purpose of minimizing the amount of blood required to fill the blood pathways.

In 1948, one of these designs was revived as a tool in a study of laboratory dialysis. A unit of the original design containing 1 sq. m. of cellophane surface (approximately 1/10 of the original surface area contemplated for use as an oxygenator) was built and exhibited at two scientific exhibits in 1949. A modification of this model containing metering channels of Teflon (a tetrafluoroethylene resin preparation) suitable for use with blood was exhibited in 1953.[5]

The reported successes of the blood dialyzer technique elsewhere were an encouragement to the continued development of this very compact blood dialyzer.[5] Its portability and small blood-volume requirement seemed to open the way to an extension of the blood dialyzer technique into a wide range of investigative situations. Since September, 1953, this project has been supported adequately enough to allow the construction of apparatus suitable for trials in man.[6] Trials of this equipment with animals were successful in the early months of 1954; the compact blood dialyzer seen in figure 1*A* was thus available for clinical use at a time when the clinical situation described in the following case report was presented.

## Report of a Case

A 41-year-old woman was first admitted to a small community hospital for a cesarean section in 1947. Fifteen months later she was admitted for the second time for anemia. Except for pallor, her physical examination revealed no abnormalities. Blood examination showed a hemoglobin level 58% of normal (8 gm. per 100 cc.). Urinalysis revealed occasional leukocytes and squamous cells but no other abnormalities. A transfusion of 500 cc. of blood was given, following which the patient's oral temperature rose from 98 F (36.6 C) to 99 F (37.2 C) and the pulse rate from 72 to 96 per minute. The patient, however, felt no discomfort at any time and was discharged the same day. She was admitted for the third time to the same hospital during the next year because of the extraction of teeth and secondary anemia. She was discharged one day after admission. Her fourth admission to the same hospital was approximately two years later at the age of 44. The diagnosis of secondary anemia was again recorded. She was very pale and felt tired and weak. A transfusion of 500 cc. of whole blood was given. Within 30 minutes of the completion of the transfusion, the patient experienced a chill, which lasted 30 minutes and was accompanied by a severe headache. External heat was applied. During this period of discomfort, her oral temperature rose from 98.6 F (37 C) to 100.6 F (38.1 C) and her pulse rate from 76 to 88. A dull headache persisted the next morning. Laboratory work done prior to the transfusion showed the urine to be normal, an erythrocyte count of 4,030,000 per cubic millimeter, and a hemoglobin level of 10.6 gm. per 100 cc. Her blood type was group A, Rh positive.

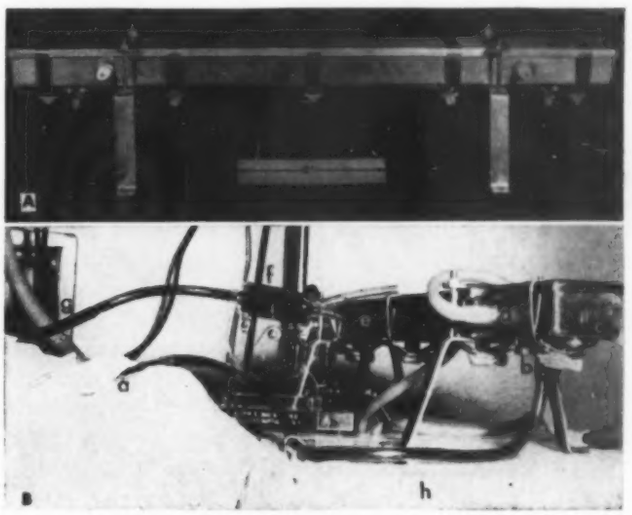


Fig. 1.—*A*, MacNeill Mark XIb blood dialyzer. *B*, dialyzer as used in patient with acute renal failure: a, radial artery cannula; b, blood entrance port of dialyzer; c, dialyzer; d, washing-fluid entrance of dialyzer; e, blood channel from dialyzer to the flow meter; f, blood flow meter; g, blood line returning to the cephalic vein cannula; h, bedside table. The washing-fluid reservoir is on the floor.

Almost three years later the patient, now 47 years old, was admitted for the fifth time to the same hospital. A diagnosis of cholelithiasis and chronic cholecystitis had been made, and a cholecystectomy was scheduled. The patient received an organic iodine dye compound by mouth on the night of admission, as a gallbladder roentgenogram study was to be made the following morning. When she returned from the x-ray department, a transfusion of 500 cc. of whole blood was started. This was infused in about 90 minutes. Another 500 cc. of whole blood was used. One-half hour later the patient began to have a chill; hot water bottles gave some comfort. The transfusion was completed within two hours. One hour later the patient still had chills, requiring the use of extra blankets. Her oral temperature had now risen from a level of 98 F, before the transfusion, to 100 F (37.7 C).

The patient felt better in the evening of that day, but it was noted that she passed red urine the following morning. The laboratory report stated the urine to be reddish in color and slightly turbid; acid in reaction; negative for sugar; and with a slight trace of albumin, a specific gravity of 1.010, and a sediment of 1 to 3 epithelial cells and amorphous debris. Blood studies done the same day revealed an erythrocyte count of 4,400,000 and a hemoglobin level of 13.9 gm. per 100 cc. The patient spent a comfortable day. Her gallbladder was

removed the following morning. She received another 500 cc. of whole blood during this operation. Her oral temperature before surgery was 98.2 F (36.7 C). Five hours after surgery, it was 98.8 F (37.1 C). At this time, 9 oz. (266 cc.) of "blood-stained" urine was collected by catheter. In the laboratory it was described as reddish in color and slightly turbid, acid in reaction, negative for sugar and albumin, and with a specific gravity of 1.010; leukocytes were rare and the sediment contained few epithelial cells and amorphous urates and debris. Eight hours after surgery the patient's oral temperature was 102 F (38.8 C); 3 oz. (89 cc.) of urine was excreted. A nasogastric tube was inserted to relieve abdominal distention. A new indwelling urinary bladder catheter was inserted on the morning after surgery, and 1 oz. (30 cc.) of black urine was obtained. The laboratory examination of the black urine revealed an alkaline reaction, 2–6 white blood cells per high-power field, 5–10 red blood cells per high-power field, and occasional cells; a test for bile was positive, and amorphous phosphates were present.

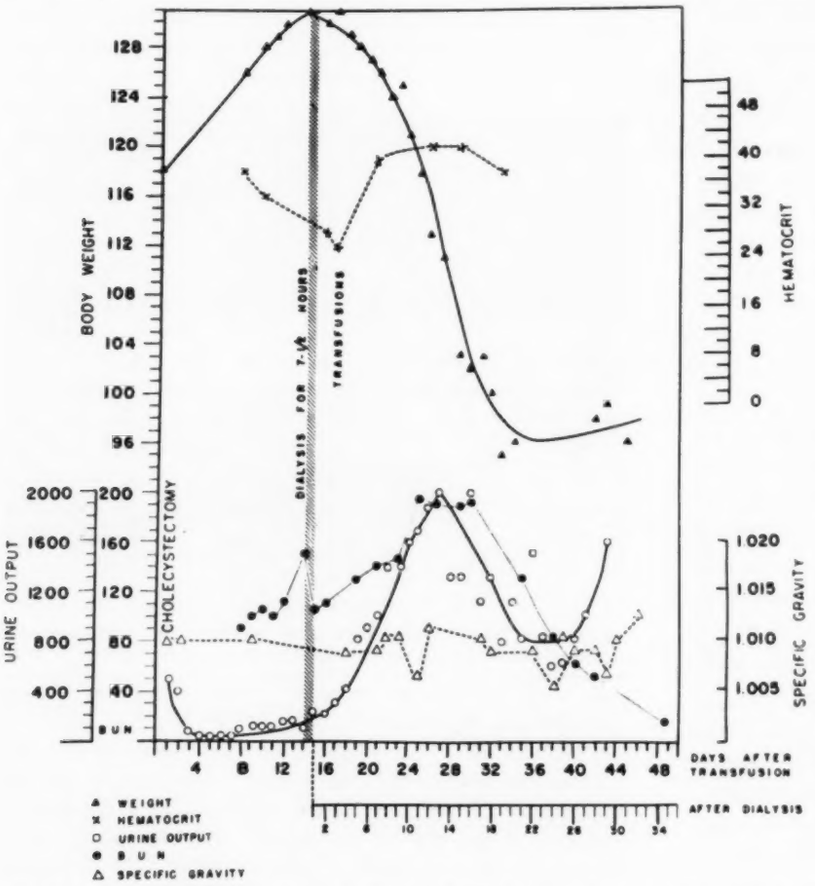


Fig. 2.—Laboratory findings during acute illness and convalescence of patient with renal failure.

In the next few days she could retain nothing by mouth. In the first four days after operation, her urinary output totaled only 101 cc. Her nonprotein nitrogen level rose from 55 mg. to 75 mg. per 100 cc., while the serum sodium level was 133 mEq. per liter, the potassium level was 5.14 mEq. per liter, and the carbon dioxide content was 45 vol. %. She was transferred to our hospital for hemodialysis.

*Serologic Data.*—There was some question as to whether the patient's kidney failure was due to the sequelae of surgical intervention or to a hemolytic transfusion reaction. For that reason, a detailed serologic analysis was carried out. The patient was found to belong to blood group A, Rh positive, subtype $Rh_1$. There was some doubt as to whether she was homozygous or heterozygous in $Rh_1$. A slight reaction obtained with anti-c serum was attributed to transfusions she had received previously and to that mixture of heterozygous cells with her own homozygous $Rh_1$ cells. The patient's cells proved to be Kell-negative and Duffy-negative. Tests were then carried out with known Kell-positive cells, and it was found that the patient's serum agglutinated the Kell-positive cells, but that the agglutinin in the patient's serum had no relation with the Duffy factor.

The patient's serum was tested against a panel of 48 test cells, 4 of which were agglutinated. The factor responsible for the agglutination of those four test cells could be identified with the Kell factor, which is present in about 7 to 10% of the white American population. Quantitative titration demonstrated the Kell antibody present in the patient's serum to be strong. There was a saline agglutinin up to a titer of 1:8 and an incomplete antibody up to a titer of 1:256 when undiluted normal human serum was used as a diluent. The use of serum albumin as diluent decreased rather than increased the strength of the Kell antibody titer, confirming a previous report by Dr. Grove-Rasmussen.[7] Actually there are only a few Kell serums reported in the literature that contain an antibody that can be demonstrated by direct agglutination technique in a test tube, even when saline solution is used as a diluent. The conclusion was therefore reached that the patient's kidney failure was due to a hemolytic transfusion reaction. The Kell-negative patient apparently was sensitized to the Kell factor by the transfusion of the Kell-positive blood during her previous hospital admissions, which stimulated the production of Kell antibodies. A transfusion given at her last admission apparently was of blood that was also Kell-positive, causing the transfusion reaction. For further blood transfusions only Kell-negative blood was selected, and no reactions were observed.

*Results of Dialysis.*—The patient's condition was observed for one week prior to the dialysis. During this time her condition deteriorated rapidly, remaining anuric and becoming more acidotic. Despite careful restriction of fluid, caloric intake of at least 100 gm. of carbohydrates daily, and the use of potassium-absorbing cation exchange resin rectally, she lapsed into a state of severe acidosis with hyperkalemia and coma. It was agreed that the patient was moribund. At this point she underwent hemodialysis for a period of seven and one-half hours. The dialyzer as operated in this treatment is shown in figure 1*B*. Before the blood was allowed to enter, the apparatus was filled with sodium chloride solution containing 50 mg. of heparin. The patient received 100 mg. of heparin initially and an average of 10 mg. per hour during the dialysis. The clotting time was checked frequently and was 90 minutes during most of the dialysis.

The clinical response of the patient during dialysis was very gratifying. She became conscious after seven hours and answered questions hazily. Within five hours after dialysis, she was alert and cooperative. Blood chemistry values before and after dialysis are given in the table.

Although she was voiding up to 1,600 cc. of urine per day one week after dialysis, her ability to pass concentrated urine lagged behind the volume output. She steadily improved, despite a difficult diuretic phase, and became ambulatory and asymptomatic. She was discharged from the hospital one month after dialysis, at which time she was eating a full high-calorie diet. One week after discharge from the hospital, the blood urea nitrogen level was 21 mg. per 100 cc. Some laboratory findings during the patient's acute illness and convalescence are charted in figure 2.

Urinalysis at this time revealed the urine to be straw-colored, cloudy, and acid in reaction, and with a specific gravity of 1.012, rare epithelial cells, and a trace of albumin. The specimen was negative for sugar and for bile. Five months after dialysis the phenolsulfonthalein test showed 37% excretion in one hour. Fifteen months after the dialysis, the patient was feeling well and had gained weight, and there was no albumin in the urine, which was a concentrate of 1.022.

## Comment

The MacNeill Mark XIb blood dialyzer was first used clinically in this case. A description of this dialyzer has been published elsewhere.[6] Since the time of the dialysis reported herein, the procedure has been used in 35 additional patients. A review of this series is now being prepared for publication. The blood dialyzer should be viewed as a basic communication device quite comparable to the capillary bed in the body. The term "artificial kidney" reflects wishful thinking; the dialyzer in a sense replaces the excretory function of the kidney and regulates electrolytes in the plasma. It cannot perform metabolic functions, which are so important a part of the work of the kidney. If the dialyzer is looked upon as a basic therapeutic tool, wider use of it can be made. In this instance, the use of dialysis was considered to be a life-saving measure. Statistical evaluation of hemodialysis in acute renal failure must await the accumulation of wide clinical experience.

*Blood Chemistry Values*

| | Before Dialysis | After Dialysis |
|---|---|---|
| Urea nitrogen | 146 mg. per 100 cc. | 98 mg. per 100 cc. |
| Calcium | 9 mEq. per liter | 10 mg. per 100 cc. |
| Sodium | 104 mEq. per liter | 124 mEq. per liter |
| Potassium | 8.0 mEq. per liter | 4.5 mEq. per liter |
| Chlorides | 77 mEq. per liter | 92 mEq. per liter |
| Inorganic phosphorus | 14 mg. per 100 cc. | 8.3 mg. per 100 cc. |
| Bicarbonate | 5.2 mEq. per liter | 9.0 mEq. per liter |

The unusual finding of Kell factor sensitization with subsequent transfusion reaction from the administration of Kell-positive blood excited a great deal of general interest in this patient. The reversibility of the pathological lesions following adjustment of the blood chemical levels by dialysis was striking, particularly in view of the very precarious clinical state prior to dialysis.

## Summary

A new blood dialyzer was successfully used in a patient having acute renal failure following a hemolytic transfusion reaction. This hemolytic crisis was of particular interest in relation to two unusual aspects: (1) a transfusion reaction occurring in a patient sensitized to Kell-positive cells, which appear in only 7 to 10% of the white American population, and (2) the successful use of a new blood dialyzer on this patient.

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# SPECIAL ARTICLE

## LOW-PROTEIN DIETS FOR REDUCING

**Norman Jolliffe, M. D., New York**

The publication in mass-circulation journals of reducing diets low in protein, one containing 30-40 gm. from normal foods [1] and the other a liquid formula diet containing even less,[2] has created many inquiries concerning their safety and effectiveness. Discussion of both diets on radio and television programs and promotion of the liquid formula diet over a national hookup by television commercials and newspaper advertisements by the promoters of a syrup rich in dextrose and of corn oil have stimulated further inquiries. Runs on drugstores for dextrose became so large as to be reported in the business section of a news weekly.[3]

The low-protein diet, through normal foods,[1] limits protein, it may be calculated, to 30 to 40 gm. daily, but (calories from) carbohydrate and fat are unrestricted in amount or type, so it is impossible to estimate the approximate nutritive composition of this diet. Although most of the menus in the popular version were not used in the hospital of origin,[4] this diet is based upon one used by Dole and co-workers,[5] who demonstrated in their hospital routine that limiting the protein intake of their obese subjects to 30 to 40 gm. daily resulted in a decrease in appetite and a resulting loss of weight. Serial liver function studies on 4 of their 42 subjects were unchanged, but nitrogen balance, blood lipid, hematological, or renal studies were not reported in this communication, although it was noted that "the general health remained good."

The liquid formula diet as published in the lay journal [2] consists of dextrose, corn oil, evaporated milk, and water. These are to be blended together and divided into six equal feedings, which supplies "approximately 900 calories each day." As calculated from standard food tables, and assigning 10 gm. as the weight of a tablespoon of dextrose, the diet has the

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following composition: protein, 21 gm.; fat, 53.7 gm.; carbohydrate, 89.7 gm.; and energy, 925 calories. By reducing the amount of the formula to 600 calories, as recommended when 900 calories fails to produce satisfactory weight losses, it would contain but 14 gm. of protein, and all other nutrients would be proportionately decreased.

The article,[2] probably to emphasize the safety of the liquid diet formula, notes: "The formula is a complete food mixture." "The formula is a mixture which closely approximates the proportions of protein, fat and carbohydrate in human breast milk." "The formula has been tested with obese people who are otherwise in good health." This article warns: "The formula has not been tested as a reducing diet for children, or as a method of feeding in pregnancy or in instances of impaired health where larger amounts of protein would be indicated." The article also warns dieters to take a multiple vitamin capsule daily and suggests the possibility of a noncaloric bulk mixture for laxation. The article does not warn of any hazards of a low-protein diet for normal people, or that the diet does not constitute a basis for dietary reeducation, or that it is woefully inadequate in iron. It does, however, attempt to transfer responsibility from the publisher to the reader and doctor by the following statement: "As with any reducing diet, it is important that you check first with your doctor and have his approval before you begin."

Concerning the longer range effectiveness of the liquid formula diet, the article noted that the test of any diet is whether the dieter can maintain the reduced weight. "Some patients went over their maintenance-calorie allowance, regained some weight. Others held their own." The publication [6] originally reporting this formula made no mention of the experimenters' results in treating obesity, but Dole [4] recently noted that "while both diets," referring to their liquid formula diet and their low-protein diets through normal food, "caused temporary weight loss the majority of the patients quit the diet after leaving the hospital and returned to their starting weight." It does not seem that the lay journal's [2] representation "some patients . . . regained some weight" is an adequate description of the longer range results of the liquid formula diet.

Both of these diets have additional defects as to practicability, safety, and effectiveness, but further discussion at this time will be limited to their adequacy in protein. An adequate protein intake is so basic for health and protein deficiency so adversely influences every structure and function of the body that it is axiomatic that every reducing diet should contain sufficient protein to guard against any deleterious effects of impaired protein nutrition. Opinion may and does change from time to time as to the proper "safety level" or "allowances" for protein. One has only to recall the 118 gm. recommended by Voit [7] in 1881, the 40 to 57 gm. recommended by Chittenden [8] in 1904, and the 1 gm. per kilogram of normal body weight recommended today. On the other hand, the minimum protein requirement, when defined as that amount that will just maintain nitrogen balance plus a small allowance (1 gm. of nitrogen) for losses in perspiration and maintenance of the skin, hair, and nails, should remain the same. The literature affords no evidence to the contrary.

The minimum protein requirement, as determined either by endogenous excretion of nitrogen in the urine of patients on protein-free diets adequate in calories or by balance studies that determine the minimum nitrogen intake that will just equal its excretion in the stools and urine, is remarkably uniform for animals ranging in size from mice to the cow, including man.[9] This amount is about 2 mg. of nitrogen per calorie of basal heat. Transferring this to normal 60 and 70 kg. (132 and 154 lb.) persons with basal heat productions of 1,300 and 1,650 calories, respectively, amounts to 2.6 to 3.3 gm. of nitrogen equivalent to 16.25 to 20.6 gm. of protein. This amount of protein, however, must be corrected for both digestibility and biological value.[9b] Mixed diets have a digestibility of about 90% and a biological value of about 80. Applying these factors brings the experimentally determined minimum protein intake for nitrogen balance to 22.5 and 28.6 gm. of protein for 60 and 70 kg. persons. These latter values do not include the 1 gm. of nitrogen lost in perspiration or in shedding epithelial structures. Adding this 1 gm. of nitrogen brings the minimum daily protein requirement of a normal person receiving adequate calories up to 28.75 and 34.85 gm. for 60 and 70 kg. persons. Thus a minimum of 0.5 gm. of mixed protein per kilogram of normal body weight is an accurate simplification of the minimum protein requirement, but one that allows for no variability in digestibility or in biological value, or for a calorie deficit.

The 21 gm. of protein in the liquid formula diet [2] is entirely of milk, and it may have some value not present in mixed proteins. Assigning to the milk protein in this diet a digestibility of 100% and a biological value of 74, it can then be calculated that the minimum amount required for nitrogen balance with adequate calories would be 22.0 and 27.7 gm. for 60 and 70 kg. persons respectively. These calculated figures are remarkably similar to those experimentally determined by Bricker, Mitchell, and Kinsman,[10] who found that the 60 kg. woman, when in calorie balance, required 22.4 gm. of milk protein for nitrogen balance. That the calculated and the experimentally determined requirements for proteins other than milk are also remarkably similar has been demonstrated by Hegsted, Tsongas, Abbott, and Stare.[11]

It is clear, therefore, that nonobese people in calorie balance would be unable to maintain nitrogen balance on 14 or 21 gm. of milk protein, and that 30 to 40 gm. of mixed proteins with adequate calories would be of borderline adequacy. If, however, people of normal weight are maintained on diets inadequate in calories, then larger amounts of protein would be required for nitrogen balance. This has been repeatedly demonstrated, but the last and most extensive studies have been reported by Keys and co-workers.[12] Normal young men were placed on a diet averaging about 1,600 calories and 50 gm. of protein daily. After 12 weeks their nitrogen deficit averaged 2 gm. daily, representing the nitrogen in about 466 gm. of protein tissue per week. After they had been on this diet for 23 weeks, their nitrogen excretion averaged 1 gm. daily. It is clear, then, that, if nonobese people use either the liquid formula diet or the low-protein diet through normal foods to reduce, they will do so at the expense of a nitrogen deficit and its consequences.

Obese people, however, resist protein deprivation to a greater degree than do people of normal weight. It is thus necessary to examine the evidence that calorie-deficient diets containing 14 to 21 gm. of milk protein and 30 to 40 gm. of mixed protein will maintain nitrogen balance in obese people. Dole and co-workers [5] interpret the work of Chittenden,[8] Hindhede,[13] Streick,[14] Strang, McClugage, and Evans,[15] Keeton and Dickson,[16] and Moller [17] as supporting the safety of 30 to 40 gm. of protein. Chittenden's diet [8] was 40 to 57 gm. of mixed proteins in a diet adequate in calories, which in my opinion is not "very similar to the one used in this study." Hindhede [13] presented no intelligible data on nitrogen balance. Streick [14] presented data on one person who at the age of 70 had lived for 15 years on a calorically adequate diet averaging 38 to 40 gm. of protein. The minimum protein requirement of this subject for nitrogen balance was 28 gm. of protein, and on a diet containing 23 gm. of protein he "developed loss of appetite, diminution of interest in his work, and a feeling of depression." Moller [17] used a low-calorie diet containing 37.5 gm. of mixed proteins in 40 hospitalized obese persons. His balance studies consisted of determination of urine urea nitrogen excretion in four of his subjects for a two-week period. In one of the four subjects the urea nitrogen excretion alone was greater than the 6 gm. of nitrogen estimated in the diet. Had adequate nitrogen balance studies been made, it is doubtful if any of his subjects would have been in nitrogen balance.

Much has been made of the studies of Keeton and Dickson,[16] who concluded that "when the obese patient is fed 13 to 14 grams of protein per day the negative nitrogen balance is small." It is important to reexamine their data to determine their concept of "small." Their patients, all of whom were markedly obese, were given first 90 gm. of protein, then 13.5 gm. of protein, and finally 90 gm. of protein. Each period was six weeks, and the calories were maintained at basal –30 to 40%. During the high-protein periods of 83 weeks, the nitrogen balance was negative in but 5. Furthermore, these weeks of negative nitrogen balance were scattered and unpredictable. It is thus evident that their obese patients on diets containing 90 gm. of protein were in nitrogen balance about 90% of the time. On the other hand, during 41 patient-weeks of a low-protein diet, a positive nitrogen balance was recorded in only one week, but in 6 patient-weeks the negative balance was less than 1 gm. daily. In 34 of the 41 patient-weeks the negative nitrogen balance was greater than 1 gm. daily. Thus Keeton and Dickson's "small" nitrogen balance means that their subjects were losing more than 233 gm. of protein tissue each week 80% of the time. The average loss of protein tissue per week for all 41 patient-weeks of observation averaged 455 gm. This negative nitrogen balance can only be considered "small" when compared with the losses during starvation, or after severe trauma, burns, operations, and illnesses.

It may be argued that the nitrogen requirement of obese people may be less if they are given milk proteins. In the studies of Stainsbury and Smith,[18] who kept 12 obese women on a daily diet of 1 qt. of skimmed milk and six bananas for six days, the 1 qt. of skimmed milk supplied about 34.6 gm. of milk protein. Ten of the 12 subjects were in negative nitrogen balance varying from 0.69 to 3.02 gm. of nitrogen daily, representing a loss of 160 to 700 gm. of protein tissue per week. In another series of experiments involving six obese women, for six days 72 to 191 gm. of lean beef was added to the milk and banana diet. This brought the protein intake up to 48.5 to 84.5 gm. daily, and five of the six subjects were in nitrogen balance. It is thus obvious that 34 gm. of milk protein even when supplemented by small amounts of banana protein is inadequate to maintain nitrogen balance in obese women during the first week of weight reduction. However, small amounts of lean meat added to this diet produced a positive nitrogen balance in five of six persons during the first week of weight reduction.

Further proof that nitrogen deficits are unnecessary most of the time, even in persons on extremely low-calorie diets, has been furnished by Strang, McClugage, and Evans.[15] On a 336-calorie diet containing 59 gm. of protein, their five patients were in negative nitrogen balance, which after the first three weeks, when labile nitrogen stores were being excreted, averaged 0.627 gm. of nitrogen daily, equivalent to 146 gm. of protein tissue per week. The addition of 20 gm. of carbohydrate, increasing the calorie intake to 445, brought these patients into nitrogen balance.

Thus, with established methods of determining minimum protein requirements, one finds that 14 or 21 gm. of milk protein and 30 to 40 gm. of mixed proteins in a calorie-deficient diet given obese subjects could not be expected to maintain nitrogen balance prior to the time that the protein tissue mass had been reduced to such an extent that the decreased nitrogen consumption would allow maintenance of nitrogen balance. By this time the protein tissue mass would be so little and metabolism so low that the life of the patient would be in jeopardy.

Recently the individual requirements of essential amino acids were determined by Rose [19] in a group of normal subjects on a diet giving sufficient calories. Comparing the amino acids in 21 gm. of milk proteins [20] with Rose's minimum shows the liquid formula diet to be short in cystine and methionine. When the composition of liquid formula diet is compared with the minimum requirements given by Harte and Travers [21] and with those of Stare, Hegsted, and McKibbin,[22] it is also short in cystine and methionine and in addition short in phenylalanine, threonine, and isoleucine.[22] These requirements of amino acids have so far been determined only for normal people on a diet giving sufficient calories and have not yet been determined in obese people in negative calorie balance. However, there is no reason to anticipate that the combination of obesity and inadequate calories could make the individual amino acids in 21 gm. of milk protein adequate, for the method of determining the sufficiency of each of the individual amino acids is dependent upon nitrogen balance methods.

Fortunately, few people will adhere to either of these diets for long, so no great harm will be done other than to deplete the labile protein stores that the body in its wisdom has devised to protect us foolish mortals. But there are compulsive dieters, just as there are compulsive drinkers and smokers and eaters, and in

these subjects harm can be anticipated that neither the resources of the publishers nor the ingenuity of the research scientists can always correct. The unqualified recommendation of these diets to the public is a disservice to science and to those it serves, the public.

125 Worth St. (13).

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## COUNCIL ON FOODS AND NUTRITION

### Statement of the Council

*The Council has authorized publication of the following statement.*

EUGENE H. STEVENSON, M.S.
*Acting Secretary.*

### THE "ROCKEFELLER DIET"

The Council on Foods and Nutrition has pointed out repeatedly that obesity is a medical problem and as such should be handled by a physician who will decide whether reduction in weight is necessary and safe and, if so, the means by which such reduction should be carried out. Ethical advertisers of foods recommended for weight-reducing regimens have likewise stressed the importance of a medical consultation prior to reduction of the food intake.

Because of the recent flurry of articles on weight-reduction diets in lay magazines, the reason for such a policy is reemphasized: Weight reduction may be harmful to health or even endanger life if undertaken without full understanding of the problem. A case in point is the mislabeled "Rockefeller Diet" that was first described with relevant data in two reputable scientific journals.[1] The diet, minus the data, has been popularized by persons other than the original authors in the June 12 and June 26, 1956, issues of *Look* magazine and the July, 1956, number of *The Ladies Home Journal*. It is reported that the article in *Look* magazine was not approved by the authors and, in fact, the diet deviated from the published material, including the addition of new menus. The article in *The Ladies Home Journal* is accurate in its description of the preparation and use of the formulas, and the original authors did have an opportunity to see the proof before the article appeared. The reasons that the patient must consult his physician before attempting weight reduction are insufficiently stressed in both of these articles and are barely mentioned in the former. The position of the senior author on this matter has been clearly stated in a recent letter to the Editor published in THE JOURNAL.[2]

The diet used in the experiments of the investigators at the Hospital of the Rockefeller Institute is relatively low in protein and, of course, is greatly reduced in energy content. The experimental character of such an abnormal diet makes it imperative for the physician to recommend its use only after careful investigation. The advocation of the use of this diet by nonmedical persons is condemned because of its possible harmful effect under certain situations.

The Council reemphasizes that dieting because of obesity is a medical problem. Editors of lay journals can cooperate in this important matter; if weight reduction and related problems are discussed in their columns, they should make sure that the health of the people is preserved by urging consultation with a physician. The Council's services are available for reviewing popular articles on foods and nutrition.

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# MEDICAL EDUCATION in the UNITED STATES and CANADA

## FIFTY-SIXTH ANNUAL REPORT ON MEDICAL EDUCATION IN THE UNITED STATES AND CANADA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Edward L. Turner, M.D., Walter S. Wiggins, M.D., Glen R. Shepherd, M.D., Arthur N. Springall, M.D., and Anne Tipner

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## ACKNOWLEDGMENT

The material on the following pages constitutes the 56th Annual Report on Medical Education in the United States and Canada, as compiled by the Council on Medical Education and Hospitals. The data have been derived from official sources and concern schools of medicine and other matters pertinent to medical education. Presentation of this information would not be possible without the full cooperation of medical school and university administrative officers, government officials, and many others. The Council on Medical Education and Hospitals wishes to express great appreciation to the many individuals who have cooperated in providing the information on which this current report is based.

## INTRODUCTION

In 1925, a Commission on Medical Education was organized by the Association of American Medical Colleges "to make a study of the educational principles involved in medical education and licensure, and to make suggestions which would bring them into more satisfactory relationships with the newer conceptions and methods of university education, on the one hand, and with the needs of present-day society, on the other." The work of the commission was financed by contributions from the medical schools, the American Medical Association, the Rockefeller Foundation, the Carnegie Corporation, and the Josiah Macy, Jr. Foundation. The studies of the Commission on Medical Education were directed by Dr. Willard C. Rappleye, and its final report was made in 1932. This report,[1] made a quarter of a century ago, includes a section on medical education in the summary chapter that is of such current interest that it is being utilized as the introductory note to this 56th Annual Report of the Council on Medical Education and Hospitals on Medical Education in the United States and Canada.

The horizons, opportunities, and responsibilities of medicine are expanding with great rapidity, and many of the artificial and traditional boundaries and subdivisions of science, public health, and practice are being obliterated. Medical training can not be safely isolated from community needs, on the one hand, or from the larger fields of education—general, university, and postgraduate—on the other. Its methods are becoming broader in response to the wider community, scientific, and public responsibilities which devolve upon physicians.

A large majority of physicians and educators who are familiar with the question are of the opinion that present medical training compares very favorably with other fields of education, although only a few institutions have been able to approximate the highest standards in every detail. Present-day education is held responsible by some for many of the inadequacies of medical service and practice and for the shortcomings of individual physicians, for which, however, other factors are usually largely responsible. It must be kept in mind also that some of the defects in professional training are traceable to faults in earlier education.

In the past the effort has been made in the four-year course to familiarize the student as far as time, energy, and capacity permitted with all the facts and methods in every field of medicine. Instruction in the sciences has been augmented by numerous laboratory exercises in technical methods which have proven of value in securing knowledge, but some of these have relatively little value in the training of the student. There has been a natural tendency on the part of teachers in these subjects to overemphasize the drill in laboratory methods as an educational discipline. It has been inevitable that the rapid expansion and subdivision of clinical medicine should be accompanied by an overaccentuation of teaching in the specialties. Many of these have developed their own technical procedures, treatments, literature, and research.

The hope of presenting the entire subject satisfactorily in the usual course must be abandoned as an unnecessary and futile endeavor, because no individual can be expected to master all phases of medicine. Furthermore, many parts of the subject can not be taught by the faculty; they must be learned by the student through actual experience. It is an axiom that all true education is self-education. This immediately makes the student the unit of education, not the courses, the credit hours, or the faculty, and requires that the methods of instruction should be modified accordingly.

There is a distinct shift in many medical schools now toward placing greater responsibility on the student for his own training in an effort to emphasize learning by the student in contrast to

teaching by the faculty. This change is in the direction of individualizing instruction and providing opportunities for learning, for self-development, and for independent work. The new methods are illustrated by the discontinuance of the rigid class system and uniform time and course schedules; the use of small teaching sections; personal contacts between students and instructors; provisions for reasonable free time for reading, individual work, and leisure; a reduction in the amount of lecturing; and opportunities for those who desire, and are competent to do, independent work. These changes are in recognition of the fact that the crucial element is the individual student, upon whose character, attitude, preparation, ability, and industry so largely depend the results of medical training. The aim is to develop minds capable of appraising evidence and drawing conclusions based on logical reasoning, and to help provide a permanent intellectual equipment, resourcefulness, judgment, and proper habits as well as methods of study, which will prepare the student to continue his own self-education throughout his professional life. The continuation education of the physician has been strongly emphasized as an essential element in a well-balanced medical service.

The content of the training is also undergoing significant modifications. The various courses are being made introductory in character with an emphasis on principles, leaving the training in the technical aspects of laboratory work or special treatment, which require considerable experience and additional preparation if they are to be done properly, to be obtained after graduation. Many of the laboratory techniques can be delegated, under proper supervision, to technicians. The training for most of the clinical specialties should be in postgraduate education. Although electives, free periods, and other provisions for flexibility are valuable, and the postponement of specialized training to the postgraduate [now designated as graduate] field is desirable, every student should obtain a thorough, supervised training in those fields and methods of clinical medicine which accumulated experience has emphasized as being necessary for sound practice.

The changes in motivation, content, and methods of medical training are bringing about modifications in the organization of instruction. The medical course is coming to be regarded again as a unit, rather than as a series of isolated subjects. Efforts are being made to correlate the learning in the various fields which have become isolated in the recent era of overspecialization and of emphasis on mechanical and laboratory procedures. Students are being more thoroughly drilled in the fundamentals of clinical study such as physical examinations and history taking, which will equip them to deal with many of the problems of illness and to identify conditions requiring consultation, expert treatment, or special study. Among these efforts are the demonstration of normal and abnormal structure and function in living human beings as part of the courses in anatomy and physiology; the efforts to make the basic sciences a more vital part of clinical teaching; the case method of study; the simplification of clinical instruction through its consolidation under three or four major divisions, postponing some of the specialized features to postgraduate [now graduate] training; joint clinics; and the use of comprehensive examinations. Greater emphasis is being placed in some of the schools on study of the patient as a whole, in which are considered factors of emotional tone, conditions of employment, habits of living, and other features of daily life which often determine proper diagnosis, treatment, and prevention.

Tremendous and almost unbelievable advances in knowledge applicable to medicine necessitating readjustments in medical education and medical practice have occurred in the years intervening since the preceding statement appeared. The basic statement, however, that the Council on Medical Education and Hospitals, and the Federation of State Medical Boards that flexibility began to enter into what had previously been a relatively rigid medical curriculum and that sound educational experimentation began to be encouraged.

The commission also indicated that the medical course should reflect the efforts being made to adjust practice to new conditions within the profession itself and within society. Thus it should reflect the growth of knowledge and specialized skills of professional nature, as well as the changes in industry and transportation, population changes and distribution readjustments in standards of living, changes in growth of public consciousness in regard to health, the recognition of the insurance principle concerning some of the usual hazards of living, and many other factors. The readjustments have been many and varied, and familiarity with them is an essential part of the education and training of the modern physician.

The commission also called attention to the fact that "knowledge of the chemical, physical and biological phenomena of disease, a grasp of the social and economic factors which are influencing the methods of dealing with sickness, and wide familiarity with the literature will not produce a real physician," in themselves. Such knowledge simply furnishes the physician's tools and necessitates, in addition, the personal, supervised experience that enables the student and physician to gather and evaluate evidence, learn to discriminate between valuable and unessential, and weigh subtle implications of organic and functional variations; to reach conclusions that may involve varied and seemingly unrelated factors; and to understand in their true meaning the human and emotional problems associated with ill health.

Many of these things cannot be provided by means of formal teaching devices or conscious transmission from faculty members. The more intimate relationships between students and clinicians are the best means through which the "elusive talent known as the art of medicine, an art which is a composite of scientific knowledge and methods, intellectual acumen, human understanding, sound judgment, and an ability to make decisions" can be developed. The commission indicated that success in transmitting and developing such qualifications to medical students and young physicians "depends largely upon the men and women who study and teach medicine, not upon the courses, forms or formalities of education." Forty years prior to the commission's report, Osler, in an address at the University of Minnesota (1892), stated this thesis in words that merit repeated rereading on the part of all who [illegible] he commented:

## TRENDS IN MEDICAL PRACTICE AND THEIR POTENTIAL IMPLICATIONS IN MEDICAL EDUCATION

In the section on the medical course in the summary chapter of the Report of the Commission on Medical Education [2] there is a sentence stating that "The medical course should present in schematic form at least the efforts being made to adjust practice to the new conditions within the profession itself and within society." During the past two years, two significant studies have pointed to trends in medical practice that are worthy of serious study by medical educators and others interested in medical education and medical care.

Dickinson,[3] of the A. M. A. Bureau of Economic Research, completed a study entitled, "Distribution of Medical School Alumni in the United States as of April, 1950." This 511-page multilithed volume assembled in a ring notebook was prepared in a limited edition and distributed to all medical schools and other interested organizations. This material consisted of eight series of tables entitled (1) Distribution of Five Year Graduation Groups and Type of Practice, (2) Distribution by Five Year Graduation Groups and State of Residence, (3) Distribution by Five Year Graduation Groups and Population Size of City, (4) Distribution of Part Time Specialists by Five Year Graduation Groups and Self-Declared Specialty, (5) Distribution of Full Time Specialists by Five Year Graduation Groups and Self-Declared Specialty, (6) Distribution of American Board Members by Five Year Graduation Groups and American Boards, (7) Distribution of Type of Practice and State of Residence with Percentages by Type of Practice, and (8) Distribution by Type of Practice and State of Residence with Percentage by State of Residence.

This tabulated material covered the graduation group from 1869 to 1899 in one column and the period from 1900 to 1950 in columns representing five-year groups. A complete analysis was presented for each of the 71 then approved (1950) four-year medical schools in the United States. In "A Study of Medical School Alumni," Dickinson [4] presents a summary of the comprehensive study of the alumni of medical schools. Both Bureau Bulletin M-94 (containing 600 tables) and Bulletin 101 (containing the remaining tables, including those presented in "A Study of Medical School Alumni") present factual data, and no interpretations or conclusions are offered. However, the data on analysis clearly portray the changes that have been taking place in regard to trends in medical practice and what happens to medical students after they leave medical school and prepare further for the practice of [illegible] medical educators in evaluating the [illegible]

uates. The most recent study was concerned with the medical college graduates of 1945. In the earlier surveys, six years after graduation was considered an adequate interval to allow graduates to become more or less established in their careers. The subsequent situation presented by the intervention of two world wars and the constant lengthening of graduate medical education resulted in extending this period prior to the survey to 10 or more years after graduation.

Weiskotten and Altenderfer [6] have presented an analysis of the distribution and characteristics of medical college graduates, 1915-1945, in a recent article, "Trends in Medical Practice." This study also presents factual data that should be of value to all in the field of medical education as endeavors are made to adjust programs to meet "new conditions within the profession and within society." The study indicates that (1) the differences in distribution of medical graduates and of total population among the states are not great; (2) although there is great variation among the graduates of different schools, an increasing proportion of graduates are tending to locate in smaller communities; and (3) many factors influence the choice of practice location of graduates.

It is interesting to note that (4) graduates whose prior residence was in small communities show a greater tendency to locate in such communities than do those whose former residence had been in large communities; (5) the publicly supported schools draw a higher proportion of their students from smaller communities and contribute comparatively more physicians to them than do the private schools; and (6) prior residence seemed to play a more important role in determining the place of practice than the location of the medical school attended or the community in which graduate education was obtained.

The study indicated that (7) there is a continuing increase in the proportion of graduates limiting their practice to a specialty (74% of 1945 graduates) but that (8) an increasing number of those limiting their practice are locating in smaller communities (22% of 1945 graduates limiting to a specialty are located in communities of less than 25,000 as compared with 15% of the 1935 and 1940 graduates), (9) graduates whose prior residence was in the smaller communities are less liable to limit their practice to a specialty.

Other significant facts are that (10) only 42% of the 1945 graduates who have limited their practice to a specialty are practicing individually; (11) the number of graduates occupying full-time salaried positions is increasing and over 90% of the 1945 graduates occupying such positions have limited their practice to a specialty; (12) approximately 30% of the 1945 graduates in general practice had some residency training; and [illegible] there appears to be a tendency for an increasing

teaching by the faculty. This change is in the direction of individualizing instruction and providing opportunities for learning, for self-development, and for independent work. The new methods are illustrated by the discontinuance of the rigid class system and uniform time and course schedules; the use of small teaching sections; personal contacts between students and instructors; provisions for reasonable free time for reading, individual work, and leisure; a reduction in the amount of lecturing; and opportunities for those who desire, and are competent to do, independent work. These changes are in recognition of the fact that the crucial element is the individual student, upon whose character, attitude, preparation, ability, and industry so largely depend the results of medical training. The aim is to develop minds capable of appraising evidence and drawing conclusions based on logical reasoning, and to help provide a permanent intellectual equipment, resourcefulness, judgment, and proper habits as well as methods of study, which will prepare the student to continue his own self-education throughout his professional life. The continuation education of the physician has been strongly emphasized as an essential element in a well-balanced medical service.

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Tremendous and almost unbelievable advances in knowledge applicable to medicine necessitating readjustments in medical education and medical practice have occurred in the years intervening since the preceding statement appeared. The basic statement, however, is as applicable today as it was a quarter of a century ago. Depending upon leadership, personnel, finances, and facilities, the trends being initiated at that time in liberalization of the basic program of medical education have developed with varying degrees of effectiveness in medical schools. It was largely through the discussions of the commission with representatives of the Association of American Medical Colleges, the Council on Medical Education and Hospitals, and the Federation of State Medical Boards that flexibility began to enter into what had previously been a relatively rigid medical curriculum and that sound educational experimentation began to be encouraged.

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> But it is a secondary matter, after all, whether a school is under State or University control, whether endowments are great or small, the equipments palatial or humble, the fate of an institution rests not on these; the inherent vital element, which transcends all material interests, which may give to a school glory or renown in their absence, and lacking which, all the "pride, pomp and circumstance" are vain. . . . this vitalizing element, I say lies in the men who work in its halls, and in the ideals which they cherish and teach.

## TRENDS IN MEDICAL PRACTICE AND THEIR POTENTIAL IMPLICATIONS IN MEDICAL EDUCATION

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Over 30 years ago, Weiskotten [5] developed an interest in the nature of the responsibilities that graduates of medical schools were assuming in the medical care of the American public. He initiated a program involving a survey of every fifth class of graduates of American medical colleges, beginning with the 1915 graduates. The most recent study was concerned with the medical college graduates of 1945. In the earlier surveys, six years after graduation was considered an adequate interval to allow graduates to become more or less established in their careers. The subsequent situation presented by the intervention of two world wars and the constant lengthening of graduate medical education resulted in extending this period prior to the survey to 10 or more years after graduation.

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Other significant facts are that (10) only 42% of the 1945 graduates who have limited their practice to a specialty are practicing individually; (11) the number of graduates occupying full-time salaried positions is increasing and over 90% of the 1945 graduates occupying such positions have limited their practice to a specialty; (12) approximately 30% of the 1945 graduates in general practice had some residency training; and (13) there appears to be a tendency for an increasing number of graduates who limit their practice to a specialty to seek American Board certification. Finally, (14) military requirements interrupted the residency training of 87% of the 1945 graduates.

As these studies of Dickinson, Weiskotten and Altenderfer are reviewed and evaluated, they focus thought on many matters of concern to those responsible for medical education and medical care. They involve such problems as study and analysis of needs

TABLE 1.—*Approved Medical Schools and Schools of the Basic Sciences in the United States*[**]

| State | No. | Approved Four Year Medical Schools | Ownership * | Year Organized | Tuition: Resident | Tuition: Non-resident | 1956-1957 Academic Year: Begins | 1956-1957 Academic Year: Ends | Requirement by Years | Students by Classes, 1955-1956: 1st Yr. | 2nd Yr. | 3rd Yr. | 4th Yr. | Total | Part-Time and Special Students | Graduates 7-1-55 to 6-30-56 | | No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ala. | 1 | Medical College of Alabama, Birmingham | Pub | 1943 | $ 451 | $ 851 | 9-14-56 | 6- 2-57 | 3 | 81 | 67 | 75 | 73 | 296 | 4 | 73 | Robert C. Berson, M.D., Dean | 1 |
| Ark. | 2 | University of Arkansas School of Medicine, Little Rock | Pub | 1879 | 391 | .... | 9-10-56 | 6- 8-57 | 3 | 93 | 84 | 78 | 62 | 317 | 2 | 62 | F. Douglas Lawrason, M.D., Provost | 2 |
| Calif. | 3 | College of Medical Evangelists, Loma Linda; Los Angeles | Pri | 1909 | 1,292 | 1,292 | 9- 3-56 | 6- 5-57 | 3 | 99 | 101 | 101 | 84 | 385 | 0 | 84 | Walter E. Macpherson, M.D., Dean | 3 |
| | 4 | University of Southern California School of Med., Los Angeles | Pri | 1885 | 950 | 950 | 9-24-56 | 6-21-57 | 3 | 69 | 64 | 69 | 69 | 271 | 0 | 68 | Thomas H. Brem, M.D., Chrm., Admin. Com. | 4 |
| | 5 | Stanford University School of Medicine, San Francisco | Pri | 1908 | 1,005 | 1,005 | 9-24-56 | 6-12-57 | 3 | 58 | 59 | 57 | 62 | 236 | 0 | 62 | Windsor C. Cutting, M.D., Dean | 5 |
| | 6 | University of California School of Medicine, San Francisco | Pub | 1864 | 334 | 584 | 9-17-56 | 6- 5-57 | 3 | 77 | 82 | 76 | 79 | 314 | 0 | 79 | John B. deC. M. Saunders, M.D., Dean | 6 |
| | 7 | University of California School of Medicine, Los Angeles | Pub | 1951 | 334 | 584 | 9- 7-56 | 6- 5-57 | 3 | 50 | 49 | 33 | 36 | 168 | 0 | 36 | Stafford Warren, M.D., Dean | 7 |
| Colo. | 8 | University of Colorado School of Medicine, Denver | Pub | 1883 | 670 | 2,670 | 9-26-56 | 6- 7-57 | 3 | 86 | 81 | 77 | 71 | 315 | 1 | 72 | Robert C. Lewis, Ph.D., Dean | 8 |
| Conn. | 9 | Yale University School of Medicine, New Haven | Pri | 1812 | 900 | 900 | 9-19-56 | 6- 1-57 | 3 | 79 | 81 | 83 | 73 | 316 | 0 | 71 | Vernon Lippard, M.D., Dean | 9 |
| D. C. | 10 | Georgetown University School of Medicine, Washington | Pri | 1851 | 960 | 960 | 9-10-56 | 5-18-57 | Degree | 115 | 98 | 118 | 110 | 441 | 0 | 110 | Francis M. Forster, M.D., Dean | 10 |
| | 11 | George Washington University School of Medicine, Washington | Pri | 1825 | 900 | 900 | 9-17-56 | 6- 5-57 | 3 | 102 | 94 | 88 | 88 | 372 | 0 | 88 | Walter A. Bloedorn, M.D., Dean | 11 |
| | 12 | Howard University College of Medicine, Washington | Pri | 1869 | 587 | 587 | 9-14-56 | 6- 7-57 | 72 Sem. hrs. | 79 | 68 | 75 | 67 | 289 | 7 | 68 | Robert S. Jason, M.D., Dean | 12 |
| Fla. | 13 | University of Miami School of Medicine, Coral Gables | Pri | 1952 | 720 | 720 | 9-10-56 | 6- 5-57 | 3 | 73 | 65 | 34 | 26 | 198 | 1 | 26 | Homer F. Marsh, Ph.D., Dean | 13 |
| Ga. | 14 | Emory University School of Medicine, Emory University | Pri | 1854 | 800 | 800 | 9-13-56 | 6- 7-57 | 3 | 73 | 66 | 74 | 71 | 284 | 2 | 71 | Arthur P. Richardson, M.D., Dean | 14 |
| | 15 | Medical College of Georgia, Augusta | Pub | 1828 | 435 | 690 | 9- 5-56 | 6- 8-57 | 3 | 101 | 101 | 82 | 68 | 352 | 5 | 67 | Harry B. O'Rear, M.D., Dean | 15 |
| Ill. | 16 | Chicago Medical School, Chicago | Pri | 1912 | 664 | 664 | 10- 1-56 | 6-15-57 | 4 & Degree | 73 | 70 | 67 | 73 | 283 | 0 | 73 | John J. Sheinin, M.D., President | 16 |
| | 17 | Northwestern University Medical School, Chicago | Pri | 1859 | 930 | 930 | 10- 3-56 | 6-15-57 | 3 | 133 | 126 | 128 | 136 | 523 | 0 | 134 | Richard H. Young, M.D., Dean | 17 |
| | 18 | Stritch School of Medicine of Loyola University, Chicago | Pri | 1915 | 800 | 800 | 9-27-56 | 6-15-57 | 3 | 88 | 75 | 78 | 84 | 325 | 0 | 79 | John F. Sheehan, M.D., Dean | 18 |
| | 19 | University of Chicago, The School of Medicine, Chicago | Pri | 1924 | 940 | 940 | 10- 2-56 | 6- 8-57 | 3 | 72 | 70 | 73 | 71 | 286 | 0 | 71 | Lowell T. Coggeshall, M.D., Dean, Division of Biological Sciences | 19 |
| | 20 | University of Illinois College of Medicine, Chicago | Pub | 1882 | 325 | 613 | 10- 1-56 | 6-22-57 | 3 | 167 | 155 | 152 | 162 | 636 | 0 | 159 | Granville A. Bennett, M.D., Dean | 20 |
| Ind. | 21 | Indiana University School of Medicine, Bloomington; Indianapolis | Pub | 1903 | 400 | 700 | 9-10-56 | 6- 4-57 | 3 | 155 | 149 | 141 | 141 | 586 | 0 | 141 | John D. Van Nuys, M.D., Dean | 21 |
| Iowa | 22 | State University of Iowa College of Medicine, Iowa City | Pub | 1869 | 152 | 307 | 9-20-56 | 6- 7-57 | 3 | 120 | 110 | 101 | 110 | 441 | 2 | 110 | Norman B. Nelson, M.D., Dean | 22 |
| Kan. | 23 | University of Kansas School of Medicine, Lawrence; Kansas City | Pub | 1880 | 475 | 925 | 9-13-56 | 5-30-57 | Degree | 101 | 98 | 109 | 120 | 428 | 0 | 120 | W. Clarke Wescoe, M.D., Dean | 23 |
| Ky. | 24 | University of Louisville School of Medicine, Louisville | Pri | 1837 | 800 | 1,200 | 9-10-56 | 6- 1-57 | 3 | 97 | 93 | 96 | 93 | 379 | 0 | 93 | J. Murray Kinsman, M.D., Dean | 24 |
| La. | 25 | Louisiana State University School of Medicine, New Orleans | Pub | 1931 | 120 | 520 | 9- 4-56 | 6- 1-57 | 3 | 126 | 106 | 98 | 96 | 426 | 6 | 96 | William W. Frye, M.D., Dean | 25 |
| | 26 | Tulane University of Louisiana School of Medicine, New Orleans | Pri | 1834 | 900 | 900 | 9-19-56 | 6- 3-57 | 3 | 131 | 129 | 126 | 125 | 511 | 0 | 124 | Maxwell E. Lapham, M.D., Dean | 26 |
| Md. | 27 | Johns Hopkins University School of Medicine, Baltimore | Pri | 1883 | 970 | 970 | 9-17-56 | 6-11-57 | Degree | 74 | 75 | 68 | 69 | 286 | 0 | 69 | Philip Bard, Ph.D., Dean | 27 |
| | 28 | University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore | Pub | 1807 | 735 | 885 | 9-20-56 | 6- 8-57 | 3 | 96 | 83 | 96 | 100 | 375 | 0 | 99 | William S. Stone, M.D., Dean | 28 |
| Mass. | 29 | Boston University School of Medicine, Boston | Pri | 1873 | 1,000 | 1,000 | 9-10-56 | 5-25-57 | 3 | 73 | 71 | 70 | 70 | 284 | 1 | 70 | Chester S. Keefer, M.D., Director | 29 |
| | 30 | Harvard Medical School, Boston | Pri | 1782 | 1,062 | 1,062 | 9-24-56 | 6-13-57 | 2 | 118 | 117 | 142 | 153 | 530 | 0 | 151 | George Packer Berry, M.D., Dean | 30 |
| | 31 | Tufts University School of Medicine, Boston | Pri | 1893 | 1,015 | 1,015 | 9-19-56 | 5-25-57 | 3 | 111 | 109 | 113 | 110 | 443 | 0 | 111 | Joseph M. Hayman, Jr., M.D., Dean | 31 |
| Mich. | 32 | University of Michigan Medical School, Ann Arbor | Pub | 1850 | 440 | 770 | 9-24-56 | 6-15-57 | 3 | 206 | 181 | 184 | 191 | 762 | 2 | 189 | A. C. Furstenberg, M.D., Dean | 32 |
| | 33 | Wayne State University College of Medicine, Detroit | Pub | 1885 | 543 | .... | 9- 4-56 | 6- 8-57 | 3 | 76 | 76 | 66 | 63 | 281 | 1 | 63 | Gordon H. Scott, Ph.D., Dean | 33 |
| Minn. | 34 | University of Minnesota Medical School, Minneapolis | Pub | 1883 | 400 | 785 | 10- 1-56 | 7-14-57 | 3 | 128 | 121 | 116 | 116 | 481 | 0 | 115 | Harold S. Diehl, M.D., Dean | 34 |
| Mo. | 35 | St. Louis University School of Medicine, St. Louis | Pri | 1901 | 905 | 905 | 9-18-56 | 6- 1-57 | 3 | 127 | 121 | 117 | 114 | 479 | 7 | 114 | James W. Colbert, Jr., M.D., Dean | 35 |
| | 36 | Washington University School of Medicine, St. Louis | Pri | 1842 | 906 | 906 | 9-17-56 | 6- 8-57 | 3 | 87 | 81 | 92 | 99 | 359 | 0 | 99 | Oliver H. Lowry, M.D., Dean | 36 |
| Neb. | 37 | Creighton University School of Medicine, Omaha | Pri | 1892 | 812 | 812 | 9-17-56 | 6- 1-57 | 3 | 76 | 71 | 72 | 78 | 297 | 0 | 77 | F. G. Gillick, M.D., Dean | 37 |
| | 38 | University of Nebraska College of Medicine, Omaha | Pub | 1881 | 450 | 615 | 9-19-56 | 6-15-57 | 3 | 87 | 80 | 80 | 84 | 331 | 0 | 83 | James P. Tollman, M.D., Dean | 38 |
| N. Y. | 39 | Albany Medical College, Albany | Pri | 1838 | 1,007 | 1,007 | 9-10-56 | 5-29-57 | 3 | 64 | 59 | 50 | 48 | 221 | 0 | 48 | Harold C. Wiggers, Ph.D., Dean | 39 |
| | 40 | University of Buffalo School of Medicine, Buffalo | Pri | 1847 | 985 | 985 | 9-24-56 | 6-15-57 | 4 | 85 | 83 | 66 | 62 | 296 | 3 | 62 | Stockton Kimball, M.D., Dean | 40 |
| | 41 | Columbia University College of Physicians and Surgeons, New York City | Pri | 1767 | 983 | 983 | 9-17-56 | 6- 1-57 | 3 | 119 | 111 | 114 | 118 | 462 | 0 | 118 | Willard C. Rappleye, M.D., Dean | 41 |
| | 42 | Cornell University Medical College, New York City | Pri | 1898 | 1,000 | 1,000 | 9-12-56 | 6-12-57 | 3 & degree | 84 | 83 | 84 | 87 | 338 | 0 | 84 | E. Hugh Luckey, M.D., Dean | 42 |
| | 43 | New York Medical College, Flower and Fifth Avenue Hospitals, New York City | Pri | 1858 | 936 | 936 | 9-10-56 | 5-25-57 | 3 | 128 | 129 | 111 | 108 | 476 | 0 | 108 | Ralph E. Snyder, M.D., Dean | 43 |
| | 44 | New York University College of Medicine, New York City | Pri | 1841 | 1,017 | 1,017 | 9-10-56 | 5-29-57 | 3 | 131 | 139 | 139 | 140 | 687 | 0 | 140 | Lloyd Stephens, M.D., Dean | 44 |
| | 45 | State University of New York College of Medicine, New York City | Pub | 1858 | 715 | 715 | 9-17-56 | 6- 1-57 | 3 | 151 | 143 | 147 | 146 | 587 | 2 | 146 | Howard Potter, M.D., Dean | 45 |
| | 46 | State University of New York College of Medicine, Syracuse | Pub | 1872 | 715 | 715 | 9-10-56 | 6- 8-57 | 3 | 80 | 72 | 64 | 70 | 286 | 0 | 71 | William R. Willard, M.D., Dean | 46 |
| | 47 | University of Rochester School of Medicine and Dentistry, Rochester | Pri | 1925 | 900 | 900 | 9-10-56 | 6- 8-57 | 3 | 71 | 70 | 68 | 64 | 273 | 0 | 64 | Donald G. Anderson, M.D., Dean | 47 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 43 | New York Medical College, Flower and Fifth Avenue Hospitals, New York City | Pri | 1858 | 936 | 936 | 9-10-56 | 5-25-57 | 3 | 128 | 120 | 111 | 108 | 476 | 0 | 108 | Ralph E. Snyder, M.D., Dean | 43 |
| | 44 | New York University College of Medicine, New York City | Pri | 1841 | 1,017 | 1,017 | 9-10-56 | 5-20-57 | 3 | 141 | 130 | 120 | 149 | 587 | 0 | 146 | Daniel Sheehan, M.D., Dean | 44 |
| | 45 | State University of New York College of Medicine, New York City | Pub | 1858 | 715 | 715 | 9-17-56 | 6- 1-57 | 3 | 151 | 143 | 147 | 146 | 587 | 2 | 146 | Howard Potter, M.D., Dean | 45 |
| | 46 | State University of New York College of Medicine, Syracuse | Pub | 1872 | 715 | 715 | 9-10-56 | 6- 8-57 | 3 | 80 | 72 | 64 | 70 | 286 | 0 | 71 | William R. Willard, M.D., Dean | 46 |
| | 47 | University of Rochester School of Medicine and Dentistry, Rochester | Pri | 1925 | 900 | 900 | 9-10-56 | 6- 8-57 | 3 | 71 | 70 | 68 | 64 | 273 | 0 | 64 | Donald G. Anderson, M.D., Dean | 47 |
| N. C. | 48 | Duke University School of Medicine, Durham | Pri | 1930 | 1,020 | 1,020 | 10- 1-56 | 6-15-57 | 3 | 77 | 76 | 80 | 81 | 314 | 0 | 80 | Wilburt C. Davison, M.D., Dean | 48 |
| | 49 | Bowman Gray School of Medicine of Wake Forest College, Winston Salem | Pri | 1902 | 750 | 750 | 10- 1-56 | 6-15-57 | 3 | 54 | 48 | 54 | 48 | 204 | 1 | 47 | C. C. Carpenter, M.D., Dean | 49 |
| | 50 | University of North Carolina School of Medicine, Chapel Hill | Pub | 1890 | 670 | 1,270 | 9-18-56 | 6- 3-57 | 3 | 68 | 64 | 58 | 59 | 249 | 1 | 59 | W. Reece Berryhill, M.D., Dean | 50 |
| Ohio | 51 | University of Cincinnati College of Medicine, Cincinnati | Pub | 1819 | 698 | 823 | 9-24-56 | 6- 1-57 | 3 | 93 | 82 | 78 | 85 | 338 | 2 | 85 | Stanley E. Dorst, M.D., Dean | 51 |
| | 52 | Western Reserve University School of Medicine, Cleveland | Pri | 1843 | 810 | 810 | 9-19-56 | 6-14-57 | 3 | 83 | 85 | 76 | 78 | 322 | 1 | 78 | Joseph T. Wearn, M.D., Dean | 52 |
| | 53 | Ohio State University College of Medicine, Columbus | Pub | 1914 | 576 | .... | 10- 2-56 | 6- 7-57 | 3 | 151 | 144 | 135 | 143 | 573 | 0 | 144 | Charles A. Doan, M.D., Dean | 53 |
| Okla. | 54 | University of Oklahoma School of Medicine, Oklahoma City | Pub | 1900 | 450 | 800 | 9-17-56 | 5-25-57 | 3 | 101 | 89 | 91 | 98 | 379 | 0 | 96 | Mark R. Everett, Ph.D., Dean | 54 |
| Ore. | 55 | University of Oregon Medical School, Portland | Pub | 1887 | 561 | 819 | 10- 1-56 | 6-15-57 | 3 | 77 | 75 | 69 | 74 | 295 | 15 | 71 | D. W. E. Baird, M.D., Dean | 55 |
| Pa. | 56 | Hahnemann Medical College and Hospital of Philadelphia, Philadelphia | Pri | 1848 | 847 | 847 | 9- 6-56 | 6- 8-57 | 3 | 109 | 98 | 97 | 95 | 399 | 0 | 95 | Harold A. Taggart, M.D., Acting Dean | 56 |
| | 57 | Jefferson Medical College of Philadelphia, Philadelphia | Pri | 1825 | 883 | 883 | 9-10-56 | 6-13-57 | 3 | 176 | 164 | 166 | 171 | 677 | 0 | 171 | George Allen Bennett, M.D., Dean | 57 |
| | 58 | Temple University School of Medicine, Philadelphia | Pri | 1901 | 850 | 850 | 9-10-56 | 6-10-57 | 3 | 128 | 119 | 114 | 127 | 488 | 0 | 125 | William N. Parkinson, M.D., Vice President and Dean | 58 |
| | 59 | University of Pennsylvania School of Medicine, Philadelphia | Pri | 1765 | 970 | 970 | 9- 4-56 | 6-12-57 | 3 | 125 | 123 | 128 | 124 | 500 | 0 | 124 | John McK. Mitchell, M.D., Dean | 59 |
| | 60 | Woman's Medical College of Pennsylvania, Philadelphia | Pri | 1850 | 975 | 975 | 9-10-56 | 6-13-57 | 3 | 51 | 47 | 44 | 40 | 182 | 0 | 40 | Marion Fay, Ph.D., Dean | 60 |
| | 61 | University of Pittsburgh School of Medicine, Pittsburgh | Pri | 1886 | 815 | 815 | 9-10-56 | 6- 8-57 | 3 | 100 | 84 | 92 | 87 | 363 | 0 | 87 | William S. McElroy, M.D., Dean | 61 |
| S. C. | 62 | Medical College of South Carolina, Charleston | Pub | 1823 | 437 | 1,537 | 9-13-56 | 6- 6-57 | 3 | 79 | 74 | 76 | 67 | 296 | 0 | 67 | John T. Cuttino, M.D., Dean | 62 |
| Tenn. | 63 | University of Tennessee College of Medicine, Memphis | Pub | 1876 | 450 | 675 | 7- 5-56 | 6-12-57 | 3 | 217 | 179 | 186 | 199 | 781 | 0 | 199 | O. W. Hyman, Ph.D., Vice President and Dean | 63 |
| | 64 | Meharry Medical College, Nashville | Pri | 1876 | 744 | 744 | 9-17-56 | 6- 3-57 | 3 | 75 | 61 | 58 | 65 | 259 | 11 | 62 | Daniel T. Rolfe, M.D., Dean | 64 |
| | 65 | Vanderbilt University School of Medicine, Nashville | Pri | 1874 | 810 | 810 | 9-24-56 | 6- 2-57 | Degree | 51 | 49 | 53 | 51 | 204 | 1 | 51 | John B. Youmans, M.D., Dean | 65 |
| Texas | 66 | University of Texas Southwestern Medical School, Dallas | Pub | 1943 | 110 | 360 | 9-10-56 | 6- 1-57 | 3 | 102 | 93 | 100 | 99 | 394 | 8 | 98 | Atticus J. Gill, M.D., Dean | 66 |
| | 67 | University of Texas Medical Branch, Galveston | Pub | 1890 | 92 | 342 | 9-15-56 | 6- 1-57 | 3 | 166 | 159 | 139 | 150 | 614 | 0 | 151 | John B. Truslow, M.D., Executive Director | 67 |
| | 68 | Baylor University College of Medicine, Houston | Pri | 1900 | 797 | 797 | 9-10-56 | 5-27-57 | 3 | 87 | 85 | 93 | 77 | 342 | 7 | 77 | Stanley W. Olson, M.D., Dean | 68 |
| Utah | 69 | University of Utah School of Medicine, Salt Lake City | Pub | 1905 | 480 | 830 | 9-24-56 | 6-57 | 3 | 54 | 54 | 58 | 43 | 209 | 3 | 40 | Philip B. Price, M.D., Dean | 69 |
| Vt. | 70 | University of Vermont College of Medicine, Burlington | Pub | 1822 | 554 | 1,004 | 9-14-56 | 6-16-57 | 4 | 50 | 46 | 40 | 44 | 180 | 0 | 44 | George A. Wolf, M.D., Dean | 70 |
| Va. | 71 | University of Virginia School of Medicine, Charlottesville | Pub | 1827 | 464 | 864 | 9-14-56 | 6-17-57 | 3 | 77 | 74 | 76 | 62 | 289 | 0 | 61 | Thomas Harrison Hunter, M.D., Dean | 71 |
| | 72 | Medical College of Virginia, Richmond | Pub | 1838 | 596 | 921 | 9- 5-56 | 5-28-57 | 3 | 84 | 82 | 101 | 99 | 366 | 0 | 98 | Erling S. Hegre, Ph.D., Chrm., Interim Committee | 72 |
| Wash. | 73 | University of Washington School of Medicine, Seattle | Pub | 1945 | 300 | 495 | 10- 3-56 | 6-14-57 | 3 | 77 | 71 | 72 | 68 | 288 | 2 | 68 | George N. Aagaard, M.D., Dean | 73 |
| Wis. | 74 | University of Wisconsin Medical School, Madison | Pub | 1907 | 340 | 660 | 9-24-56 | 6-17-57 | 3 | 87 | 78 | 81 | 79 | 325 | 9 | 79 | John Z. Bowers, M.D., Dean | 74 |
| | 75 | Marquette University School of Medicine, Milwaukee | Pri | 1912 | 900 | 900 | 9-10-56 | 5-31-57 | 3 | 102 | 101 | 101 | 90 | 394 | 9 | 87 | John S. Hirschboeck, M.D., Dean | 75 |
| P. R. | 76 | University of Puerto Rico School of Medicine, San Juan | Pub | 1949 | 539 | 539 | 8-13-56 | 5-18-57 | 3 | 52 | 47 | 42 | 43 | 184 | 0 | 43 | E. Harold Hinman, M.D., Dean | 76 |
| | | Totals | | | | | | | | 7,423 | 6,958 | 6,893 | 6,886 | 28,160 | 116 | 6,845 | | |
| | | **Approved Schools of Basic Medical Sciences** | | | | | | | | | | | | | | | | |
| Miss. | 1 | University of Mississippi School of Medicine, Jackson | Pub | 1903 | 600 | 810 | 9-24-56 | 6-26-57 | 3 | 80 | 54 | .. | .. | 134 | 2 | .. | David S. Pankratz, M.D., Dean | 1 |
| Mo. | 2 | University of Missouri School of Medicine, Columbia | Pub | 1845 | 319 | ... | 9-18-56 | 6- 8-57 | 3 | 45 | 43 | .. | .. | 88 | 4 | .. | Roscoe L. Pullen, M.D., Dean | 2 |
| N.H. | 3 | Dartmouth Medical School, Hanover | Pri | 1797 | 980 | 980 | 9-16-56 | 6-16-57 | Degree | 25 | 23 | .. | .. | 48 | 1 | .. | Rolf C. Syvertsen, M.D., Dean | 3 |
| N.Dak. | 4 | University of North Dakota School of Medicine, Grand Forks | Pub | 1905 | 178 | 358 | 9- 4-56 | 6- 8-57 | 3 | 40 | 37 | .. | .. | 77 | 4 | .. | Theodore H. Harwood, M.D., Dean | 4 |
| S.Dak. | 5 | University of South Dakota School of Medical Sciences, Vermillion | Pub | 1907 | 260 | 470 | 8-27-56 | 6- 3-57 | 3 | 42 | 30 | .. | .. | 72 | 4 | .. | W. L. Hard, Ph.D., Dean | 5 |
| W.Va. | 6 | West Virginia University School of Medicine, Morgantown | Pub | 1912 | 264 | 700 | 9-14-56 | 6- 3-57 | 3 | 31 | 29 | .. | .. | 60 | 0 | .. | Edward J. Van Liere, M.D., Dean | 6 |
| | | Totals | | | | | | | | 263 | 216 | .. | .. | 479 | 15 | .. | | |
| | | Grand Totals (Four Year Schools and Schools of Basic Medical Sciences) | | | | | | | | 7,686 | 7,174 | 6,893 | 6,886 | 28,639 | 131 | 6,845 | | |
| | | **Schools Developing New Programs** | | | | | | | | | | | | | | | | |
| | | University of Mississippi School of Medicine, Jackson | Pub | 1903 | 600 | 810 | 9-24-56 | 6-26-57 | 3 | .. | .. | 28 | .. | 28 | | | David S. Pankratz, M.D., Dean | |
| | | University of Missouri School of Medicine, Columbia | Pub | 1845 | 319 | ... | 9-18-56 | 6- 8-57 | 3 | .. | .. | 25 | .. | 25 | | | Roscoe L. Pullen, M.D., Dean | |
| | | Albert Einstein College of Medicine, New York | Pri | 1955 | 1,050 | 1,050 | 9-17-56 | 6-21-57 | 3 | 56 | .. | .. | .. | 56 | | | Marcus D. Kogel, M.D., Dean | |
| | | Totals | | | | | | | | 7,742 | 7,174 | 6,946 | 6,886 | 28,748 | 131 | 6,845 | | |

* Pub—Public, Pri—Private.
** Schools developing new programs not yet eligible for full approval included at the end of the table.

and trends; possible overemphasis on specialization or certain facets of specialization; importance of greater knowledge as to needs in various specialty fields, curriculum studies, and modifications; selection of students; factors influencing distribution of medical school graduates and their ultimate decisions as to place and type of practice; possible modification in programs of premedical and medical education; and possibilities of shortening time factors in basic indoctrination. Many other questions will present themselves to those who carefully review and analyze these important contributions to the knowledge of what is happening to medical school graduates today. Are these trends answering the needs of the times? How can medical schools most effectively conduct their programs so that the constantly overlapping and increasing responsibilities in undergraduate, graduate, and postgraduate education can be met most satisfactorily? The problems and challenges confronted in medical education today are numerous, stimulating, and demanding of constant study and efforts toward resolution.

sciences, indicating whether publicly or privately owned, year of organization, enrollment in each class, and other pertinent data. Similar information concerning Canadian schools is given in table 2.

There have been certain changes in the classification of schools by type of ownership since the last report. The School of Medicine of the University of Louisville has been listed for many years as a municipally owned institution. Recent correspondence from officials of the University of Louisville points out that the university was chartered by the Commonwealth of Kentucky in 1846 as a private corporation. Under the terms of this charter, it is governed by a board of trustees appointed by the mayor and aldermen of the city of Louisville. It has not been subject to either state or local regulations affecting public institutions. It receives no designated tax support from the city of Louisville or other governmental agency, although the city annually makes an appropriation to the university at the request of the board of trustees. Thus, the School of Medicine of the University of Louisville has been classified erroneously

TABLE 2.—*Approved Medical Schools and Approved*

| | | | Year Organized | Tuition | | 1956-1957 Academic Year | | Years Current Pre-Medical Requirements |
|---|---|---|---|---|---|---|---|---|
| | | | | Resident | Non-resident | Begins | Ends | |
| | | **Approved Medical Schools** | | | | | | |
| Alta. | 1 | University of Alberta Faculty of Medicine, Edmonton | 1913 | 351 | 351 | 9- 4-56 | 5- 4-57 | 3 |
| B. C. | 2 | University of British Columbia School of Medicine, Vancouver | 1949 | 445 | 445 | 9- 4-56 | 5- 4-57 | 3 |
| Man. | 3 | University of Manitoba Faculty of Medicine, Winnipeg | 1883 | 491 | 496 | 9-10-56 | 5-15-57 | 3 |
| N. S. | 4 | Dalhousie University Faculty of Medicine, Halifax | 1867 | 481 | 481 | 9- 4-56 | 5-16-57 | 3 |
| Ont. | 5 | Queen's University Faculty of Medicine, Kingston | 1854 | 470 | 470 | 9-10-56 | 5-10-57 | 2 |
| | 6 | University of Ottawa Faculty of Medicine, Ottawa | 1945 | 515 | 815 | 9- 5-56 | 4-30-57 | 3 |
| | 7 | University of Western Ontario Faculty of Medicine, London | 1881 | 575 | 575 | 9-11-56 | 5-18-57 | 3 |
| | 8 | University of Toronto Faculty of Medicine, Toronto | 1843 | 591 | 591 | 9-26-56 | 5- 4-57 | 2 |
| Que. | 9 | McGill University Faculty of Medicine, Montreal | 1823 | 594 | 594 | 9- 5-56 | 5-21-57 | 3 |
| | 10 | University of Montreal Faculty of Medicine, Montreal | 1843 | 400 | 480 | 9-11-56 | 5-24-57 | Degree |
| | 11 | Laval University Faculty of Medicine, Quebec | 1848 | 425 | 625 | 9- 5-56 | 6- 1-57 | Degree |
| | | Totals | | | | | | |
| | | **Approved School of Basic Medical Sciences** | | | | | | |
| Sask. | 1 | University of Saskatchewan College of Medicine, Saskatoon | 1926 | 468 | 468 | 9-26-56 | 5-21-57 | 2 |
| | | Grand Total (Four year schools and Saskatchewan) | | | | | | |
| | | **Newly Developing Medical School** | | | | | | |
| | | University of Saskatchewan College of Medicine, Saskatoon** | 1926 | 518 | 518 | 9- 4-56 | 4-30-57 | 2 |
| | | Totals | | | | | | |

* Intern and premedical figures not included.
** Currently developing full four year program. Not yet eligible for approval.

## MEDICAL SCHOOLS

### APPROVED MEDICAL SCHOOLS

In the academic year 1955-1956, the University of Miami School of Medicine in Coral Gables, Fla., completed the initial development of its four-year undergraduate program in medicine. After a liaison survey, this institution was granted approval by the Council on Medical Education and Hospitals and membership in the Association of American Medical Colleges. This increases to 76 the number of approved medical schools in the United States with full four-year programs in effect. There continue to be six approved two-year schools of basic medical sciences, although three of these (see section on newly developing schools) are in the process of expanding to four-year programs.

In Canada, there are 11 approved four-year schools and one approved two-year school of basic medical sciences. The latter, the University of Saskatchewan College of Medicine, had its first third-year class in attendance during the year of this report and will be eligible for survey as a four-year school during the forthcoming academic year. Table 1 lists by states the four-year schools and the schools of basic medical

in the past and is now properly designated as a privately owned institution.

As of July 1, 1956, Wayne University and its college of medicine in Detroit became a state institution owned by the state of Michigan and is to be operated under the authority of a board of governors. Now named Wayne State University, it is anticipated that this change in ownership will result in increased financial support, allowing for future enlargement and improvement of the physical plant of the medical school and subsequent increase in the student enrollment. These changes leave the University of Cincinnati College of Medicine as the only remaining municipally owned medical school. In this and subsequent reports, type of ownership shall be designated as public or private with no further reference to state or municipal ownership. It should be emphasized that this classification deals with ownership and not source of financial support. Certain privately owned medical schools receive more support from public funds than do some of the publicly owned schools. With these modifications and the addition of the University of Miami School of Medicine, there are now 43 privately owned and 39 publicly owned medical schools.

## NEWLY DEVELOPING MEDICAL SCHOOLS

As was noted in last year's report, entirely new four-year schools are in the process of development at New York City (Albert Einstein College of Medicine), Jersey City (Seton Hall College of Medicine and Dentistry), and Gainesville, Fla. (University of Florida School of Medicine). The initial class has completed its first year of study at Albert Einstein. Seton Hall and the University of Florida will admit their initial classes in September, 1956.

Also previously reported were the extension of former two-year programs to full four-year programs at the schools of medicine of the University of Mississippi, University of Missouri, and West Virginia University. The former two have had third-year students in attendance during the past academic year and will graduate their first classes during the coming academic year. The school of medicine at West Virginia University expects to let contracts this summer for construction of its teaching hospital to be completed in the summer of 1959. If this schedule is followed, the first third-year class will be enrolled in September, 1959, and graduation will take place in 1961. Other reports have contained reference to the proposal for a new medical school at the University of Kentucky. The present legislature has appropriated funds for the construction of the medical school and a teaching hospital. It is planned that this construction will proceed so that the first class can be admitted in September, 1959.

Table 3 presents in tabular form information about newly developing schools. Interest in the development of a medical school as part of the University of Connecticut has been mentioned in earlier reports. The last legislature appropriated funds for preliminary planning, including site determination. No further action is expected until the next session of the legislature, but the Republican platform in the state includes favorable action on the proposal for the creation of the medical school in Hartford. Although the Democratic platform has not as yet been published, it seems likely that that party will also endorse this proposal, since it has previously looked upon it with favor.

TABLE 3.—*Medical Schools Currently Developing Four Year Programs*

| Name of Institution | New or Extended Development | Estimated Graduation Date of First Class |
|---|---|---|
| University of Mississippi School of Medicine | Formerly 2 year school | 1957 |
| University of Missouri School of Medicine | Formerly 2 year school | 1957 |
| West Virginia University School of Medicine | Formerly 2 year school | 1961 |
| Albert Einstein College of Medicine | Completely new school | 1959 |
| Seton Hall College of Medicine and Dentistry | Completely new school | 1960 |
| University of Florida School of Medicine | Completely new school | 1960 |
| University of Kentucky School of Medicine | Completely new school | 1963 |

## DEVELOPMENTS OF INTEREST IN MEDICAL SCHOOLS

Fifty-seven medical schools in the United States and five of the Canadian institutions reported developments of major interest during the past year. These developments included areas such as administrative organization, curriculum studies and modification, increased faculty personnel, augmented faculty salaries, major new construction, increased resources for student loans and scholarships, changes in methods of selection of students, and additions to endowment resources.

Thirty schools in the United States and four of the Canadian institutions reported curriculum planning or activation of previously determined curriculum changes. Curriculum studies reflect the constant dissatisfaction with certain aspects of the medical course and a sincere desire on the part of medical educators to improve undergraduate opportunities in this field as well as the continuing need for revision in keeping with the changing scene. Curriculum innovations vary from the introduction of a variety of weekly lectures on nonmedical subjects by authorities in the various fields of music, literature, art, philosophy, and history to an objective analysis or reorganization of the total current program of the institution. Under the direction of its section of physical medicine and rehabilitation, Yale has established a program of long-term observation and follow-up of patients with chronic illnesses undergoing rehabilitation, and its section of preventive medicine has organized a program in which selected patients from the outpatient clinics are visited in their homes and elsewhere for epidemiological investigation. Miami is directing attention to interdepartmental inte-

*in Canada*

| Students by Classes, 1955-1956 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| First Pre-Medical Year | Second Pre-Medical Year | 1st Year | 2nd Year | 3rd Year | 4th Year | Additional Year | Required Intern Year | Total* | Part Time and Irregular Students | Graduates 7-1-55 to 6-30-56 | | |
| | | 58 | 50 | 50 | 58 | | | 216 | 0 | 59 | John W. Scott, M.D., Dean | 1 |
| | | 60 | 48 | 52 | 62 | | | 222 | 0 | 60 | John W. Patterson, M.D., Dean | 2 |
| | | 72 | 51 | 50 | 67 | | | 240 | 0 | 64 | Lennox G. Bell, M.D., Dean | 3 |
| | | 56 | 53 | 54 | 51 | | 51 | 214 | 0 | 51 | C. B. Stewart, M.D., Dean | 4 |
| 65 | | 54 | 63 | 48 | 59 | 60 | | 284 | 0 | 59 | G. Harold Ettinger, M.D., Dean | 5 |
| 23 | 28 | 71 | 49 | 52 | 33 | | | 205 | 2 | 32 | A. L. Richard, M.D., Dean | 6 |
| | | 57 | 58 | 58 | 58 | | | 231 | 0 | 58 | J. B. Collip, M.D., Dean | 7 |
| 131 | 119 | 163 | 125 | 145 | 151 | | | 584 | 0 | 151 | J. A. MacFarlane, M.D., Dean | 8 |
| | | 115 | 106 | 97 | 108 | | | 426 | 0 | 108 | G. Lyman Duff, M.D., Dean | 9 |
| | | 129 | 105 | 112 | 98 | | | 444 | 0 | 96 | Wilbrod Bonin, M.D., Dean | 10 |
| | | 159 | 135 | 129 | 111 | | 80 | 534 | 0 | 78 | Jean-Baptiste Jobin, M.D., Dean | 11 |
| 219 | 147 | 994 | 843 | 847 | 856 | 60 | 131 | 3,600 | 2 | 816 | | |
| | | 41 | 40 | ... | ... | | | 81 | 0 | ... | J. Wendell Macleod, M.D., Dean | 1 |
| 219 | 147 | 1,035 | 883 | 847 | 856 | 60 | 131 | 3,681 | 2 | 816 | | |
| ... | ... | .... | ... | 30 | ... | .. | ... | 30 | .. | ... | | |
| 219 | 147 | 1,035 | 883 | 877 | 856 | 60 | 131 | 3,711 | 2 | 816 | J. Wendell Macleod, M.D., Dean | |

gration, to the elimination of "extraneous" course work, and to the provision of increased unassigned time for students in its curriculum structure.

The Medical College of Georgia has expanded and reorganized its faculty because of the service additions required of its clinical faculty in the new Eugene Talmadge Memorial Hospital, which began to function as an integrated unit of the Medical College early in 1956. At the University of Illinois, two of the three quarters of physiology formerly taught in the second year have been transferred to the first year with the total first-year instructional plan revised so as to enable much correlative and integrative teaching, including the utilization of frequent correlation conferences. The second-year program has been revised to enhance opportunities for correlative and integrated teaching in microbiology, pathology, pharmacology, and physical diagnosis. This has made it possible to incorporate much of the introductory instruction in clinical subjects, formerly offered through lectures, in these correlated teaching exercises. At Louisville, all students beginning medicine in the class of 1956 will eventually experience a four-quarter senior year, one quarter of which will provide an elective period of study.

The University of Nebraska has modified its curriculum so as to develop increasing use of small group teaching. Albany Medical College has developed curriculum plans to completely alter that portion of the second-year program concerned with the introduction to the numerous clinical entities. Introductory lecture courses are being replaced by an integrated interdepartmental program oriented around history taking, physical diagnosis, and interview techniques under the title, Introduction to Medicine. Albany Medical College also reports that the coordinated program of physiology and biochemistry initiated last year has been quite successful and has proved to be stimulating and rewarding to both students and teaching staff.

New York University has developed a special honors program in its curriculum planning, to which 12 to 15 students will be admitted annually. Currently, New York University is conducting a general review of the curriculum of the college of medicine and of the postgraduate medical school as well as the relationship of the medical center to the university and its role in the paramedical educational programs. Harvard Medical School and Johns Hopkins University School of Medicine both report intensive curriculum studies and possible revisions to be announced at a later date. The University of Pennsylvania is also conducting a comprehensive study of its entire program of medical education. The University of Rochester School of Medicine has undertaken a long-range study of its program, with the anticipation that it will extend through another two to three years before any major changes are decided upon and put into effect.

At Albert Einstein College of Medicine, biochemistry and physiology are being taught as a single course. The lecture, laboratory, and conference work traditionally encompassed by these two subjects, it is felt, can be well integrated and made more effective. The new laboratories of this developing medical school have been designed to permit integrated teaching for small groups of students. The State University of New York College of Medicine at Syracuse is modifying its curriculum so as to provide continuity of outpatient experience over a 12-to-18-week period in place of the former 6-week experience. The University of Pittsburgh reports radical changes in its curriculum, with increased emphasis on individual and small group teaching on both inpatient and outpatient services.

The University of Oregon and the University of Utah report intensive studies of their curriculums, with a view toward basic improvements. At the University of Washington, electives in the first two years have been introduced two afternoons weekly throughout the year, and a seven-week elective period is offered in the fourth year. The faculty at the University of Wisconsin Medical School has been engaged in a comprehensive curriculum analysis. The preceptorship program at Wisconsin has been in operation for 28 years, so that a considerable experience with this form of medical education has accrued. Part of the current study at Wisconsin, therefore, includes a detailed review of the educational objectives, methodology, impact on student attitudes, and relationship of the preceptorship experience to the total educational program.

The University of Alberta Medical Faculty, Dalhousie University Faculty of Medicine, McGill University Faculty of Medicine, and the University of Saskatchewan Faculty of Medicine all report curriculum studies in progress or the activation of previously formulated programs.

Fourteen schools in the United States and two of the Canadian medical schools report changes of administrative organization. These vary from changes of key administrative personnel to major readjustments of departmental interrelationship or such significant developments as the transfer of status from a municipal to state institution. About one-fourth of the medical schools in the United States and one medical school in Canada reported construction of physical facilities related to their activities. Sixteen institutions in the United States reported augmentation of resources for student loans and/or scholarships. Twelve of the schools indicated changes in procedures of student selection. Seven medical schools indicated significant increases in faculty personnel, and 16 reported augmented salary levels. Sixteen schools in the United States also reported significant additions to their endowment resources.

## CONSTRUCTION OF FACILITIES

During the year 1955-1956, 16 schools in the United States and one in Canada reported the completion of construction projects representing a total expenditure of approximately 65 million dollars. Included in this were new basic science buildings at the State University of New York at Brooklyn, as well as at Albert Einstein, and completely new teaching hospitals at Arkansas, Oregon, Temple, and South Carolina schools of medicine. During the same period, 17 schools in the United States and two in Canada have undertaken new construction projects totaling approximately 45 million dollars. Howard, Michigan, and Laval schools of medicine have started new basic science buildings, and the University of Washington has begun construc-

tion on the major unit of its teaching hospital. There has been a significant decrease since last year in the number and cost of projects initiated and projects completed.

## MEDICAL SCHOOL FINANCING AND ESTIMATED 1956-1957 RESOURCES AND BUDGETS

Data submitted in the questionnaire-replies from which statistical information for this report was obtained indicate that, in keeping with the trend over the past several years, there has been further augmentation in the projected 1956-1957 total over-all basic medical school operating budgets as compared to those projected last year for 1955-1956. In this report the "basic medical school operating budget" is restricted to funds utilized for the operating activities of the school exclusive of appropriations for hospital and/or clinic operation and maintenance or grants-in-aid from outside sources for research or teaching. This basic operating budget, which represents information from 76 approved four-year schools and 6 approved schools of basic medical science is projected as $111,167,673. For 75 approved four-year schools and 6 approved schools of basic medical science the projected 1955-1956 basic operating budget was $98,012,621. The 1956-1957 projection, therefore, represents a differential increase of $13,155,052, with the addition of only one four-year medical school.

Forty-eight medical schools report estimated basic operating budget funds from governmental (state, municipal, federal) sources totaling $52,701,162 (47.5%) for 1956-1957 as compared to $47,727,835 (48.7%) in 1955-1956. Anticipated endowment income is reported from 50 medical schools as approximately $12,775,283 (11.5%) as compared to $10,358,181 (10.6%) for 47 institutions reporting such sources for 1955-1956. Tuition income represents a relatively smaller percentage of the total estimated operating budget resource for 1956-1957 and will constitute $20,305,535 (18.2%) as compared to $19,210,304 (19.2%) for the past year. Thirty-five medical schools estimate a total of $7,507,980 (6.7%) from general university fund allocation as

TABLE 4.—*Estimated Sources of Basic Medical Operating Budgets, 1956-1957*

| No. of Schools | Source of Funds | Amount | % of Total |
|---|---|---|---|
| 48 | Government (state) municipal, federal) appropriation | $ 52,701,162 | 47.5 |
| 50 | Endowment | 12,775,283 | 11.5 |
| 79 | Tuition Income | 20,305,535 | 18.2 |
| 35 | General University Funds | 7,507,980 | 6.7 |
| 78 | Gifts, Grants, and Other Sources | 17,877,713 | 16.1 |
| | Total..... | $111,167,673 | 100.0 |

compared to $6,286,416 (6.3%) the previous year. Estimated gifts, grants, and other sources reported by 78 schools this year represent $17,877,713 (16.1%) as compared to $14,429,885 (15.2%) in 1955-1956. Table 4 presents this data in summarized form.

As was indicated in the last presentation of data on anticipated medical school budgets covering basic operations, it is important for the reader to appreciate the fact that this summarization constitutes a general picture of the source of total funds in each category in relation to the total projected 1956-1957 basic operating budget for all of the schools. The percentage allocations, therefore, do not reflect the actual distribution of sources of financing within the individual schools but represent a pooled composite. This fact will be further clarified by noting that in

TABLE 5.—*Estimated Funds Available to Medical Schools, 1956-1957*
(Exclusive of funds available for construction and operational costs of major clinical facilities.)

| Category | Amount |
|---|---|
| Basic budgeted funds and appropriations (table 4)... | $111,167,673 |
| Research grants from outside sources..... | 58,435,518 |
| Teaching grants from outside sources..... | 9,047,269 |
| Total..... | $178,650,460 |

table 4, 34 of the 82 schools receive no basic operating funds from governmental sources, 32 have no endowment income, and only 35 reported allocations from general university funds. Furthermore, in some of the state institutions, appropriations from governmental sources constitute the major source of all basic operating funds, while, in some of the private schools, tuition and endowment constitute the greatest sources of anticipated income.

Table 5 summarizes the over-all estimated funds available to medical schools for the 1956-1957 period and includes research grants and teaching grants from outside sources as well as basic operating budgets. There is a further increase in anticipated estimates for support of both research and teaching grants during the 1956-1957 period as compared to the previous year. Seventeen of the medical schools estimate research grants from outside sources in excess of one million dollars. Of these, eight institutions anticipate such support in excess of 2 million dollars and two of this group indicate estimates of over 3 million dollars. Teaching grants from outside agencies vary from $25,000 to $400,000. Seventy-five of the 76 approved four-year schools and the 6 two-year schools of basic medical sciences will be recipients of both research and teaching grants from outside sources during 1956-1957. The single exception is one of the state-supported schools, which receives over $300,000 in grants from outside sources supporting research but which has no grants from outside sources in support of teaching programs.

Significant financial support of medical education has been made during the past several months by the Commonwealth Fund and the Ford Foundation through the medium of special grants. Ten university medical schools received appropriations from the Commonwealth Fund totaling $7,150,000. The purpose of these awards was to aid the recipient institutions to initiate or maintain creative programs in medical education. Commonwealth Fund executives were "convinced of the compelling need for medical schools to clarify their educational objectives in the postwar world." The institutions who were recipients of Commonwealth Fund appropriations will undoubtedly find it possible to initiate and/or strengthen experimental

programs that should be of general interest and value, in part or in total, to the advancement of medical education in the years ahead.

The Ford Foundation in December, 1955, announced that it had allocated 90 million dollars to privately supported medical schools as endowment to aid them in strengthening their instruction. At the time of this annual Report on Medical Education in the United States and Canada, an announcement has not yet been made as to the exact allocation of funds from this grant to the individual schools. In March, 1956, the board of trustees of the Ford Foundation also approved an appropriation of 10 million dollars for a 5-to-10-year program of matching grants to the National Fund for Medical Education. This appropriation was designed to provide for grants to assist the National Fund in its efforts to strengthen the financial support for medical schools throughout the United States and to develop new sources of such support. Matchable funds include all contributions made to the National Fund except any restricted for distribution to particular schools or for specific purposes. In other words, matchable funds include only those contributed in support of medical education in general and will not include any contributions with specific designation of recipient institution. All undesignated contributions to the National Fund will be subject to matching on a sliding formula up to an annual maximum of 2 million dollars. This Ford Foundation appropriation, therefore, greatly enhances the potentialities of the National Fund for Medical Education and should stimulate greater interest on the part of industry to augment the support of medical education.

TABLE 6.—*Résumé of American Medical Education Foundation and National Fund for Medical Education Allocation to Medical Schools Since 1951*

| | |
|---|---|
| Amount raised by American Medical Education Foundation, transferred and distributed through National Fund for Medical Education (January, 1951, through December, 1955) | $4,684,312.47 |
| Amount raised by National Fund for Medical Education and distributed with American Medical Education Foundation funds (January, 1951, through December, 1955) | $4,914,179.31 |
| Total amount distributed to medical schools through National Fund for Medical Education (January, 1951, through December, 1955) | $9,598,491.48 |

It would seem that the appropriation of these two great philanthropic agencies gave recognition to the fact that medical schools today are complex centers of medical science, concerned with medical education in all of its aspects as well as with the conduct of activities directed toward the constant search for new knowledge in relation to the prevention, diagnosis, and treatment of human illness. They represent a vital "shot in the arm" in support of the increasing financial needs of medical education that must be met if current high standards of education and training in this field are not jeopardized. At the June, 1956, meeting of the board of trustees of the American Medical Education Foundation, the executive director reported on the funds distributed from this source through the National Fund for Medical Education since 1951. Table 6 summarizes this information.

Both the American Medical Education Foundation and the National Fund for Medical Education have shown growth during the past year. The Ford Foundation appropriation of 10 million dollars to the National Fund for Medical Education designed to match unrestricted funds up to an annual maximum of 2 million dollars will undoubtedly result in a material increase in support for schools through the National Fund in the future. The fact that many physicians prefer to assign their contributions through the American Medical Education Foundation to the institutions from which they received their medical degrees has rendered a considerable portion of funds received by the American Medical Education Foundation ineligible for matching with Ford Foundation funds. Contributions for specific schools through the medium of the American Medical Education Foundation have been encouraged rather than discouraged, while the National Fund has adhered to the original concept that its resources should be for medical education in general and not restricted to a specific institution or a specific group of institutions.

The Board of Trustees of the American Medical Association has continued to contribute $100,000 to the American Medical Education Foundation and to underwrite the costs of its fund raising program. It is to be hoped that both the American Medical Education Foundation and the National Fund for Medical Education will continue to grow rapidly, gaining in contributors and in resources in the interests of increased support for medical education.

## CHARACTERISTICS OF THE CURRICULUM IN THE BASIC MEDICAL SCIENCES

The continuing and perhaps increasing interest in the structure of the educational pattern in medicine is demonstrated by the fact that in 30 schools in the United States the undergraduate medical curriculum is under active study. This Council has received many inquiries indicating a particular desire for information concerning certain gross national characteristics of the medical school curriculum.

In response to these inquiries, the medical school questionnaire, which largely serves as the basis for this report, included questions relevant to the distribution of hours during the first two years of the curriculum. Information as to how these hours are utilized was also requested. Data pertinent to the five major basic medical sciences and pathology are presented in this report. A similar presentation of data concerning other components (introduction to the clinical sciences, physical diagnosis, clinical laboratory diagnosis, etc.) of the curriculum of the first two medical years will be made in next year's report.

In the disciplines dealt with here, information is given for the subjects in those five schools with the greatest total assignment of hours in that subject, for those five schools with the smallest assignment of hours, and for the five schools whose hour assignments place them in a median position. The material should readily lend itself to comparative study of curriculum structure in the subject concerned for all medical schools.

## Anatomy

In table 7, the total hours of anatomy were computed by adding hours allocated to the subdivisions of anatomy. Where embryology was listed separately by any school, it has been included in the hours designated for microanatomy. In an unknown number of instances, hour assignments in neuroanatomy also included neurophysiology.

TABLE 7.—*Curriculum Structure in Anatomy*

| School | Total Hours | Lecture Hours | Seminar or Conference Hours | Laboratory or Demonstration Hours | Hours Gross | Hours Microanatomy | Hours Neurology |
|---|---|---|---|---|---|---|---|
| **Maximum Group** | | | | | | | |
| Stanford | 770 | 66 | 42 | 66 | 462 | 198 | 110 |
| Georgia | 758 | 132 | 28 | 598 | 418 | 241 | 99 |
| Ohio | 726 | 165 | 0 | 561 | 330 | 264 | 132 |
| Jefferson | 720 | 142 | 0 | 578 | 408 | 212 | 100 |
| Northwestern | 708 | 172 | 0 | 536 | 348 | 261 | 99 |
| **Median Group** | | | | | | | |
| SUNY Syracuse | 607 | 187 | 10 | 410 | 330 | 202 | 75 |
| Hahnemann | 606 | 132 | 47 | 427 | 300 | 200 | 106 |
| Albany | 603 | 102 | 0 | 501 | 360 | 132 | 111 |
| Wayne | 600 | 168 | 0 | 432 | 336 | 144 | 120 |
| U of Pennsylvania | 597 | 23 | 71 | 503 | 384 | 96 | 117 |
| **Minimum Group** | | | | | | | |
| South Carolina | 478 | 82 | 0 | 396 | 279 | 100 | 99 |
| Illinois | 472 | 152 | 0 | 320 | 236 | 162 | 74 |
| Johns Hopkins | 448 | 73 | 9 | 366 | 203 | 176 | 69 |
| Yale | 445 | 57 | 48 | 340 | 280 | 98 | 67 |
| U of Chicago | 408 | 0 | 0 | 408 | 204 | 96 | 108 |

Allocations in gross anatomy ranged from a maximum of 462 hours to a minimum of 187, with a median of 330; in microscopic anatomy there is a range from 270 to 63, with 176 hours as the median; in neuroanatomy the maximum is 165, and minimum 66, with 99 hours in the median position. These ranges are for all schools, not just those listed in the table.

## Biochemistry

Table 8 presents the gross curriculum structure in biochemistry in those schools whose hour assignments place them in the categories previously described. Since no subdivisions of the subject are considered, it

TABLE 8.—*Curriculum Structure in Biochemistry*

| School | Total Hours | Lecture Hours | Seminar or Conference Hours | Laboratory or Demonstration Hours |
|---|---|---|---|---|
| **Maximum Group** | | | | |
| Louisville | 338 | 68 | 10 | 260 |
| Howard | 324 | 108 | 0 | 216 |
| Cincinnati | 314 | 60 | 14 | 240 |
| Tulane | 303 | 63 | 20 | 220 |
| Washington U | 302 | 54 | 32 | 216 |
| **Median Group** | | | | |
| North Dakota | 234 | 72 | 18 | 144 |
| U of Pennsylvania | 234 | 54 | 36 | 144 |
| Einstein | 229 | 28 | 40 | 161 |
| Michigan | 224 | 84 | 0 | 140 |
| Mississippi | 224 | 80 | 0 | 144 |
| **Minimum Group** | | | | |
| Oklahoma | 176 | 80 | 0 | 96 |
| St. Louis | 170 | 62 | 0 | 108 |
| Illinois | 168 | 72 | 0 | 96 |
| Yale | 160 | 45 | 25 | 90 |
| Wisconsin | 144 | 20 | 0 | 124 |

has been possible to determine the spread and median for utilization of the most commonly used methods of instruction for all schools. The maximum hours devoted to lectures are 120, the median 73, and the minimum 0. Comparable figures for seminars or conferences are 127, 0, and 0, and for laboratory work and demonstrations 260, 140, and 56.

## Physiology

The curricular pattern for physiology for the selected schools is given in table 9. The utilization of lectures in all medical schools ranges from a maximum of 190 hours to a minimum of 28 hours. The median

TABLE 9.—*Curriculum Structure in Physiology*

| School | Total Hours | Lecture Hours | Seminar or Conference Hours | Laboratory or Demonstration Hours |
|---|---|---|---|---|
| **Maximum Group** | | | | |
| Emory | 440 | 190 | 0 | 250 |
| Rochester | 410 | 86 | 40 | 284 |
| St. Louis | 359 | 79 | 28 | 252 |
| Southwestern | 355 | 96 | 70 | 189 |
| U Calif Los Angeles | 340 | 109 | 53 | 178 |
| **Median Group** | | | | |
| Creighton | 256 | 128 | 0 | 128 |
| Mississippi | 256 | 112 | 0 | 144 |
| Tufts | 256 | 32 | 64 | 160 |
| Harvard | 256 | 59 | 50 | 147 |
| Iowa | 256 | 100 | 20 | 136 |
| **Minimum Group** | | | | |
| Wisconsin | 192 | 96 | 0 | 96 |
| Johns Hopkins | 188 | 48 | 14 | 126 |
| Howard | 180 | 72 | 0 | 108 |
| Yale | 171 | 59 | 15 | 97 |
| U of Washington | 100 | 60 | 0 | 40 |

school assigns 90 hours for lectures. The maximum allocation to seminars or conferences is 127 hours and the minimum is 0. As in biochemistry, since less than half of the schools have any scheduled hours for seminars or conferences, the median is also 0.

## Pharmacology

The gross characteristics of the curriculums in pharmacology for the three selected groups of schools appears in table 10. Maximum, median, and minimum

TABLE 10.—*Curriculum Structure in Pharmacology*

| School | Total Hours | Lecture Hours | Seminar or Conference Hours | Laboratory or Demonstration Hours |
|---|---|---|---|---|
| **Maximum Group** | | | | |
| Bowman Gray | 358 | 179 | 42 | 137 |
| SUNY Syracuse | 293 | 75 | 22 | 196 |
| Jefferson | 252 | 108 | 18 | 126 |
| Medical Evangelists | 216 | 100 | 16 | 100 |
| Maryland | 216 | 96 | 24 | 96 |
| **Median Group** | | | | |
| Rochester | 168 | 40 | 8 | 120 |
| Stritch | 168 | 60 | 0 | 108 |
| Baylor | 165 | 50 | 16 | 99 |
| U Calif Los Angeles | 164 | 59 | 36 | 69 |
| Woman's Medical | 163 | 78 | 37 | 48 |
| **Minimum Group** | | | | |
| U of Chicago | 108 | 60 | 0 | 48 |
| Louisville | 99 | 51 | 15 | 33 |
| Wayne | 96 | 48 | 0 | 48 |
| Western Reserve | 88 | 47 | 20 | 21 |
| Johns Hopkins | 80 | 40 | 16 | 24 |

allocations for lectures are 179, 64, and 0 hours; for seminars and conferences 80, 12, and 0; and for laboratory and demonstration 196, 80, and 0.

## Microbiology

In table 11, total hours of microbiology represent the cumulative figure for the subdivisions that appear in the table. The range and median time allotments for the subdivisions are as follows: bacteriology—maximum 253, median 151, and minimum 0 hours; virol-

ogy—209, 21, and 0 hours; mycology—195, 8, and 0 hours; parasitology—162, 36, and 0 hours. In those instances where 0 hours are assigned to subdivisions of microbiology, undoubtedly teaching in such subdivisions is conducted under other subject titles, i. e., bacteriology, public health and preventive medicine, clinical pathology, etc. Hours devoted to various teaching methods are the total for the over-all discipline computed from data given for each subdivision. These computations were made only for the schools listed in the table, and the range and median for this data are not given.

TABLE 11.—*Curriculum Structure in Microbiology*

| School | Total Hours | Lecture Hours | Seminar or Conference Hours | Laboratory or Demonstration Hours | Bacteriology | Virol. | Mycology | Parasit. |
|---|---|---|---|---|---|---|---|---|
| **Maximum Group** | | | | | | | | |
| Rochester | 327 | 77 | 14 | 236 | 179 | 48 | 20 | 80 |
| Miami | 315 | 85 | 20 | 210 | 180 | 25 | 25 | 85 |
| Howard | 306 | 90 | 0 | 216 | 144 | 0 | 0 | 162 |
| Indiana | 301 | 81 | 22 | 198 | 0 | 196 | 0 | 105 |
| Puerto Rico | 294 | 78 | 47 | 169 | 163 | 40 | 21 | 70 |
| **Median Group** | | | | | | | | |
| U of Virginia | 282 | 60 | 0 | 172 | 150 | 28 | 19 | 35 |
| Southwestern | 228 | 75 | 27 | 126 | 151 | 33 | 14 | 30 |
| Texas | 224 | 80 | 0 | 144 | 0 | 152 | 0 | 72 |
| Woman's Medical | 220 | 64 | 21 | 135 | 154 | 31 | 11 | 24 |
| Minnesota | 218 | 57 | 16 | 145 | 148 | 46 | 24 | 0 |
| **Minimum Group** | | | | | | | | |
| Chicago Medical | 165 | 55 | 0 | 110 | 102 | 21 | 12 | 30 |
| Creighton | 160 | 96 | 0 | 64 | 160 | 0 | 0 | 0 |
| U of Chicago | 156 | 12 | 0 | 144 | 0 | 108 | 0 | 48 |
| Western Reserve | 145 | 46 | 8 | 91 | 145 | 0 | 0 | 0 |
| Wisconsin | 144 | 48 | 0 | 96 | 144 | 0 | 0 | 0 |

## Pathology

The total hours given in table 12 consists of hours assigned to both general and special pathology. It should be noted that 27 schools listed 0 hours under special pathology. In these instances, presumably the time allotted to special pathology is included in that given under general pathology. Ten of the schools listed in the table fall into this category. The maximum hours assigned to general pathology are 441, the median 233, and the minimum 32. Similar figures for special pathology are 436, 68, and 0 hours.

TABLE 12.—*Curriculum Structure in Pathology*

| School | Total Hours | Lecture Hours | Seminar or Conference Hours | Laboratory or Demonstration Hours | Hours General | Hours Special |
|---|---|---|---|---|---|---|
| **Maximum Group** | | | | | | |
| Hahnemann | 462 | 154 | 154 | 154 | 308 | 154 |
| Columbia | 440 | 99 | 88 | 253 | 407 | 33 |
| Duke | 436 | 68 | 46 | 327 | 436 | 0 |
| Indiana | 431 | 81 | 86 | 264 | 431 | 0 |
| Howard | 414 | 108 | 90 | 216 | 180 | 234 |
| **Median Group** | | | | | | |
| Vanderbilt | 315 | 76 | 0 | 239 | 315 | 0 |
| Arkansas | 312 | 78 | 0 | 234 | 312 | 0 |
| Michigan | 312 | 128 | 32 | 152 | 312 | 0 |
| Med. Coll. Virginia | 309 | 99 | 0 | 210 | 309 | 0 |
| Western Reserve | 308 | 77 | 38 | 193 | 238 | 70 |
| **Minimum Group** | | | | | | |
| Geo. Washington | 220 | 60 | 40 | 120 | 220 | 0 |
| Oregon | 198 | 66 | 0 | 132 | 198 | 0 |
| Buffalo | 153 | 51 | 0 | 102 | 153 | 0 |
| Yale | 150 | 28 | 0 | 122 | 150 | 0 |
| U of Chicago | 108 | 0 | 0 | 108 | 36 | 72 |

It is not the purpose of this study to undertake an interpretative analysis of the data, for such an interpretation would require full knowledge of the total required curriculum and teaching methodology of each institution. The material is presented for whatever value it may be to those medical schools in the process of curriculum studies. The tremendous variation from school to school in time allocated to any given subject is apparent in the tables but is even more vividly portrayed in table 13, in which the maximum, median, and minimum hourly assignments are grouped together for the six disciplines under consideration.

The tables on curricular characteristics also bring out the great variation with which the major teaching methods are employed. It is somewhat surprising to note the relatively low incidence of utilization of seminars or conferences that allow for active student participation. This teaching method is most frequently used in pharmacology (48 schools) and least often used in anatomy (21 schools).

## TEACHING RESPONSIBILITIES FOR OTHER THAN UNDERGRADUATE MEDICAL STUDENTS

In order to assist medical schools in interpreting their over-all teaching responsibilities, for the past several years these activities have been presented in this report in tabular form. This material has been widely used both locally and nationally to portray to university authorities, legislative bodies, the profession, and the public the magnitude of the educational activity of the medical schools over and above their primary function in undergraduate medical education.

TABLE 13.—*Range in Hour Assignments for Basic Medical Sciences*

| Subject | Maximum Hours | Median Hours | Minimum Hours |
|---|---|---|---|
| Anatomy | 770 | 603 | 408 |
| Biochemistry | 338 | 229 | 144 |
| Physiology | 440 | 256 | 100 |
| Microanatomy | 327 | 224 | 144 |
| Pharmacology | 358 | 165 | 80 |
| Pathology | 462 | 312 | 108 |
| Total Hours | 2,695 | 1,789 | 984 |

In the questionnaire sent to medical schools to collect information for this year's report, medical school officials were asked, as in previous years, to indicate the number of physicians attending postgraduate courses. Because of a special study, a separate questionnaire dealing only with postgraduate activities was mailed to medical schools. Included in this material was a question also asking for the number of physicians in postgraduate courses. Responses to the same question in these two questionnaires on the part of the same medical schools, frequently over the signature of the same administrative officer of the school, were so frequently and so totally disparate as to indicate their lack of validity.

Invalid data are not only useless but also misleading. Rather than attempt to compromise with validity or completeness, this table has been omitted in this current report. It is hoped that accurate data can be obtained in the future, so that this important information can again be made generally available.

TABLE 14.—*Opportunities and Enrollments for Graduate Work in Basic Medical Sciences*

| | Enrollment for Masters Degree | | | | | | | Enrollment for Ph.D. Degree | | | | | | | Other Courses Offered | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Anatomy | Biochemistry | Biophysics | Microbiology | Pathology | Pharmacology | Physiology | Anatomy | Biochemistry | Biophysics | Microbiology | Pathology | Pharmacology | Physiology | Anatomy | Biochemistry | Biophysics | Microbiology | Pathology | Pharmacology | Physiology |
| Medical College of Alabama | 3 | 6 | .. | .. | .. | .. | .. | .. | 7 | .. | .. | .. | 2 | 2 | X | .. | .. | .. | .. | .. | .. |
| University of Arkansas | .. | 5 | .. | .. | .. | .. | 2 | .. | 1 | .. | .. | .. | 1 | 1 | X | .. | .. | .. | .. | .. | .. |
| College of Medical Evangelists | .. | 3 | .. | 1 | .. | .. | 3 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | X | .. |
| University of Southern California | 5 | 13 | .. | 2 | .. | .. | 4 | .. | 24 | .. | 1 | .. | 5 | 9 | .. | X | .. | .. | .. | .. | .. |
| Stanford University | .. | .. | .. | 9 | .. | .. | 1 | 2 | .. | .. | 12 | .. | 3 | 8 | .. | .. | .. | .. | .. | .. | .. |
| University of California, San Francisco | 2 | .. | .. | .. | .. | .. | .. | 1 | 17 | .. | .. | .. | .. | 3 | .. | .. | .. | .. | .. | .. | .. |
| University of California, Los Angeles | .. | .. | 1 | .. | .. | 3 | 4 | 7 | 4 | 3 | .. | .. | .. | 5 | .. | .. | .. | .. | .. | .. | .. |
| University of Colorado | 2 | 1 | .. | 5 | .. | .. | .. | 4 | 1 | 2 | 7 | .. | 4 | 7 | .. | .. | .. | .. | .. | .. | .. |
| Yale University | .. | .. | .. | .. | .. | .. | .. | 2 | 11 | .. | 14 | .. | 2 | 2 | .. | .. | .. | .. | .. | .. | .. |
| Georgetown University | .. | 3 | .. | 1 | 2 | 1 | 1 | 1 | 1 | .. | 5 | .. | 5 | 3 | .. | .. | .. | .. | .. | .. | .. |
| George Washington University | 3 | 27 | .. | 16 | .. | 3 | 5 | 3 | 11 | .. | 23 | .. | 9 | 10 | .. | .. | .. | .. | .. | .. | .. |
| Howard University | .. | .. | .. | .. | .. | 1 | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| University of Miami | 1 | 1 | .. | 3 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Emory University | 3 | .. | .. | 2 | .. | .. | .. | 1 | 5 | .. | 1 | .. | 3 | .. | .. | .. | .. | .. | .. | .. | X |
| Northwestern University | Thirty candidates—subject not specified | | | | | | | Twenty-three Ph.D candidates subject not specified | | | | | | | .. | .. | .. | .. | .. | .. | .. |
| Stritch School of Medicine | 10 | 8 | .. | 6 | .. | 6 | 2 | .. | 4 | .. | 2 | .. | 8 | 2 | .. | .. | .. | .. | .. | .. | .. |
| University of Chicago | 5 | 4 | .. | 10 | .. | 1 | 5 | 6 | 20 | .. | 14 | .. | 14 | 6 | .. | .. | .. | .. | .. | .. | .. |
| University of Illinois | 3 | 7 | .. | 9 | 4 | 6 | 12 | 4 | 12 | .. | 5 | 1 | 9 | 8 | .. | .. | .. | .. | .. | .. | .. |
| Indiana University | .. | .. | .. | .. | .. | .. | .. | 2 | .. | .. | 3 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| State University of Iowa | 31 | 12 | .. | 10 | .. | 4 | 6 | 5 | 3 | .. | 2 | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. |
| University of Kansas | 7 | .. | .. | 5 | .. | .. | 4 | 8 | 9 | .. | 1 | .. | 1 | 3 | .. | .. | .. | .. | .. | .. | .. |
| University of Louisville | 1 | 6 | .. | 6 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Louisiana State University | .. | 6 | .. | 4 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. |
| Tulane University | 2 | 4 | .. | 4 | .. | 1 | 3 | 2 | 9 | .. | 8 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Johns Hopkins University | .. | .. | .. | .. | .. | .. | .. | .. | 5 | .. | .. | .. | .. | 4 | .. | .. | .. | .. | .. | .. | .. |
| University of Maryland | .. | .. | .. | .. | .. | .. | .. | 2 | 3 | .. | 1 | .. | 2 | 1 | .. | .. | .. | .. | .. | .. | .. |
| Boston University | .. | 11 | .. | 2 | 3 | 2 | .. | .. | 7 | .. | 4 | 1 | 4 | 5 | .. | .. | .. | .. | .. | .. | .. |
| Harvard Medical School | .. | 1 | .. | 1 | .. | .. | .. | .. | 26 | .. | 5 | 1 | 3 | 4 | X | .. | .. | .. | .. | .. | .. |
| Tufts University | .. | .. | .. | .. | .. | .. | .. | .. | 5 | .. | .. | .. | 5 | 3 | .. | .. | .. | .. | .. | .. | .. |
| University of Michigan | One hundred sixty-nine candidates—subject not specified | | | | | | | One hundred forty-seven candidates—subject not specified | | | | | | | .. | .. | .. | .. | .. | .. | .. |
| Wayne State University | .. | 1 | .. | 1 | .. | .. | 4† | 2 | 9 | .. | 1 | .. | .. | 2† | .. | .. | .. | .. | .. | .. | .. |
| University of Minnesota* | 20 | 23 | 4 | 28 | 15 | 14 | 18 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| University of Mississippi | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. |
| St. Louis University | 6 | 6 | .. | .. | .. | .. | 1 | 5 | 9 | .. | 1 | .. | .. | 2 | .. | .. | .. | .. | .. | X | .. |
| University of Missouri | 4 | .. | .. | 4 | .. | .. | 2† | 1 | 1 | .. | .. | .. | .. | 1† | .. | .. | .. | .. | .. | .. | .. |
| Washington University | 1 | 1 | .. | .. | .. | 1 | .. | 4 | 3 | .. | 2 | 2 | 3 | .. | .. | .. | .. | .. | .. | .. | .. |
| Creighton University | .. | 2 | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| University of Nebraska | 4 | 2 | .. | .. | .. | .. | 7† | .. | 1 | .. | .. | .. | .. | 3† | .. | .. | .. | X | X | .. | .. |
| Albany Medical College | 2 | 3 | .. | 3 | 1 | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | X |
| Albert Einstein University | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | X | X | .. | X | X | X | X |
| University of Buffalo | .. | 3 | .. | 2 | .. | 2 | 4 | 1 | 1 | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | X | .. | .. |
| Columbia University | .. | .. | .. | .. | .. | .. | .. | 2 | 12 | .. | 6 | .. | 3 | 6 | .. | .. | .. | .. | .. | .. | .. |
| Cornell University | .. | .. | .. | .. | .. | .. | .. | 1 | 3 | .. | 2 | .. | 1 | 5 | .. | .. | .. | .. | .. | .. | .. |
| New York University | 3 | 2 | .. | 1 | .. | .. | .. | 5 | 14 | .. | 3 | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| State University of New York, Syracuse | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | .. | 2 | 1 | .. | .. | .. | .. | .. | .. | .. |
| University of Rochester | .. | 3 | 13 | 9 | .. | 5 | 3 | 3 | 12 | 16 | 5 | 2 | 10 | 8 | .. | .. | .. | .. | .. | .. | .. |
| University of North Carolina | .. | .. | .. | 9 | .. | .. | 1 | .. | 5 | .. | 2 | .. | .. | 3 | .. | .. | .. | .. | .. | .. | .. |
| Duke University | 2 | .. | .. | 1 | .. | .. | 4† | 3 | 11 | .. | 8 | .. | .. | 3† | .. | .. | .. | .. | .. | .. | .. |
| Bowman Gray School of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | X | .. | X | .. | .. | X |
| University of North Dakota | 1 | 3 | .. | 2 | .. | .. | 1† | .. | 2 | .. | .. | .. | .. | 1† | .. | .. | .. | .. | .. | .. | .. |
| University of Cincinnati | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | 2 | .. | 4 | 3 | X | .. | .. | .. | X | .. | .. |
| Western Reserve University | 1 | 7 | .. | 1 | 2 | .. | 3 | 3 | 17 | .. | 8 | 1 | .. | 3 | .. | .. | .. | .. | .. | .. | .. |
| Ohio State University | 4 | 11 | .. | 10 | 6 | .. | 4 | 8 | 4 | .. | 4 | 1 | .. | 3 | .. | .. | .. | .. | .. | .. | .. |
| University of Oklahoma | 1 | 3 | .. | 1 | 1 | 2 | 3 | 2 | 7 | .. | 6 | 1 | 3 | 1 | .. | .. | .. | .. | .. | X | .. |
| University of Oregon | 3 | 6 | .. | .. | 1 | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | X | .. | .. | .. |
| Hahnemann Medical College | .. | 2 | .. | 2 | .. | 3 | .. | .. | .. | .. | 1 | .. | 1 | .. | X | .. | .. | .. | X | .. | X |
| Jefferson Medical College | .. | .. | .. | 2 | .. | 1 | 2 | .. | .. | .. | 2 | .. | 5 | 5 | .. | .. | .. | .. | .. | .. | .. |
| Temple University | 2 | 2 | .. | .. | .. | 2 | 3 | .. | .. | .. | 2 | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. |
| University of Pennsylvania | .. | .. | .. | 15 | .. | .. | 4 | 8 | 13 | .. | 31 | 1 | 2 | 14 | .. | .. | .. | .. | .. | .. | .. |
| Woman's Medical College | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | X | X | .. | X | X | X | X |
| University of Pittsburgh | .. | 30 | .. | .. | .. | .. | .. | .. | 20 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Medical College of South Carolina | 1 | .. | .. | .. | .. | .. | 1 | .. | 2 | .. | .. | .. | 3 | .. | .. | .. | .. | .. | .. | .. | .. |
| University of South Dakota | 1 | 1 | .. | 6 | .. | .. | 2† | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| University of Tennessee | .. | 2 | .. | .. | .. | 2 | 1 | 1 | 8 | .. | .. | 4 | 2 | 7 | .. | .. | .. | .. | .. | .. | .. |
| Meharry Medical College | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | X | .. | X | .. | .. | X |
| Vanderbilt University | .. | 2 | .. | 2 | .. | .. | .. | .. | 7 | .. | 2 | .. | 3 | 2 | .. | .. | .. | .. | .. | .. | .. |
| Southwestern Medical School | .. | .. | .. | 2 | .. | .. | .. | .. | .. | 1 | 3 | .. | .. | .. | .. | X | .. | .. | .. | .. | .. |
| University of Texas | 5 | 3 | .. | 2 | .. | .. | 1 | 1 | 2 | .. | .. | .. | 3 | 1 | .. | .. | .. | .. | X | .. | .. |
| Baylor University | 6 | 4 | .. | 6 | 1 | .. | 1 | 2 | 3 | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | .. | X | .. |
| University of Utah | 3 | 8 | .. | 7 | .. | 2 | .. | 3 | 4 | .. | 7 | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. |
| University of Vermont | .. | 2 | .. | 2 | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | X | .. | .. | .. | .. | .. | .. |
| University of Virginia | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 3 | .. | .. | 1 | X | X | .. | .. | .. | X | .. |
| Medical College of Virginia | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 9 | .. | .. | .. | .. | X | X | .. | .. |
| University of Washington | .. | 3 | .. | 13 | .. | 5 | 3 | 1 | 22 | .. | 16 | .. | 3 | 9 | .. | .. | .. | .. | .. | .. | .. |
| West Virginia University | .. | 3 | .. | 5 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| University of Wisconsin | 2 | .. | .. | .. | .. | .. | .. | 2 | 2 | .. | 10 | 5 | 2 | 6 | .. | .. | .. | .. | .. | .. | .. |
| Marquette University | 2 | 2 | .. | 4 | 4 | .. | 8 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Totals | 153 | 251 | 18 | 237 | 43 | 73 | 145 | 109 | 382 | 22 | 238 | 22 | 142 | 183 | .. | .. | .. | .. | .. | .. | .. |

* An unknown number of these may be for doctoral degrees, since level of work was not specified.
† Includes Pharmacology.

### OPPORTUNITIES AND ENROLLMENTS FOR GRADUATE WORK IN BASIC SCIENCES

The expanding demand for medical services and the increasing thirst for new knowledge to make such service more effective are necessarily dependent on the availability of personnel for teaching and investigation in medicine. Since it is generally agreed that the most crucial personnel need is in the basic science area, data were collected from the medical schools regarding current enrollment of graduate students in the basic science disciplines and regarding similar educational opportunities for which there is no present enrollment. This material is presented in table 14.

All but 6 of the 83 medical schools now in operation offer work for advanced degrees in the basic sciences at either the masters or the doctoral levels or both. Of the 77 schools offering such graduate study, all but 4 have students enrolled in one or more of the disciplines. Ten schools have enrollments only for masters degrees, and 10 have enrollments only for the doctoral degree. There are 1,119 students working toward the masters degree and 1,292 toward the doctoral degree. At both levels, most enrollments are in biochemistry, with microbiology having the next highest number.

Information was also collected as to those schools that offer advanced degrees in the clinical sciences. This material does not appear in this report, since the granting of degrees in clinical fields is largely a matter of policy determined by each school. Considerable information regarding clinical graduate education is easily accessible in the annual report by the Council on internships and residencies, which will appear this year in the Sept. 22 issue of THE JOURNAL. Upon request, information will be furnished concerning those schools that offer advanced degrees in clinical fields and the specific subjects involved.

### MEDICAL RESEARCH, MEDICAL EDUCATION, AND MEDICAL PRACTICE

The interdependence and interrelationship between research, education, and practice in medicine have long been acknowledged. In the past perhaps this acknowledgment has been of a superficial nature, taking expression in the stated objectives of medical schools and occasional statements or presentations from individuals engaged in one or more of these areas of activity. Much concern has been voiced as to fundamental problems involving personnel, finances, facilities, and other more indirect forces, such as advancing knowledge in science applicable to medicine, changing social structures, and aging populations, with their differing demands and effects. For the most part, however, this concern has appeared as a reflection of the preoccupation of individual segments of these interdependent areas.

There can be no dissent that the research of yesterday must become the education of today if it is to develop into the practice of tomorrow. Yet in medicine, there has been little probing of the significant implications of this necessary orderly progression. All too often individuals primarily engaged in one activity have little concern with or knowledge of the problems, challenges, and satisfactions of another. Unfortunately, on occasion, there seems to be greater interest in matters that separate rather than in those stronger and more enduring bonds that join colleagues in these interwoven activities.

The American Foundation in a recent two-volume study entitled "Medical Research: A Midcentury Survey"[7] presents a very thoughtful exploration of some facets of this problem. It is interesting and pertinent to note that this study resulted from an earlier interest in social and economic aspects of medical care. This earlier study convinced the foundation that social and economic problems of medical care could be brought to a permanent solution only after solution of even more challenging problems in medical education, which in turn must be considered in relation to "the broadening and deepening of fundamental research directed not only toward diagnosis and treatment of specific 'diseases' but also toward understanding of the total living organism." The American Foundation believes that "the heart of the matter is the need of supporting and expanding research in medicine as a life science involving the whole field of biology and the contributions, in theory as well as in instrumentation, of chemistry, physics, mathematics. . . . The most urgent of present national needs in the medical field is thus conceived to be expansion and improvement of medical education integrally related to research and progressive improvement of medical practice, steadily lessening the empirical nature of applications of new knowledge to medicine."

One cannot logically dispute the observation that medicine is in itself not a science but rather a collection of the applications of chemistry, physics, and mathematics in biology, for which one must view health and disease in terms of ordered or disordered metabolism. Future knowledge must come not only from study of the content and structure of metabolic components, but also from exploration of the physical factors that control organization of these components in the cell and its environment. Thus, though there is no medical science, medicine does provide the "commons-hall" for all sciences.

Has the pattern of medical education and practice properly taken into account this concept of medical research? The American Foundation's viewpoint is that "Wherever fundamental research exists, no doubt would be expressed that medicine—meaning medical research, medical education, medical practice—is of course rooted in biology; or that the development of biological and medical research is increasingly influenced by the contributions of chemistry and physics (and atomic energy), mathematics. This truth is as yet, however, only dimly reflected in the structure of medical education, or in the point of view of medical practice."

The protean nature of research in medicine largely accounts for the fact that so much of it takes place in a university setting where a wide spectrum of scientific disciplines are represented. This then inevitably provides the proper setting for medical education, but, without maximum utilization of the talents, attitudes, and facilities available in the university for education in medicine, the setting is not being properly used. If medical education does not adopt a pattern suitably related to research, the products of that education cannot be expected to take into medical practice the desired viewpoints.

The ready availability of financial support for applied research as compared to support for fundamental research has brought about considerable discussion of the need for an equitable balance between the two, lest the wellspring of knowledge for applied research run dry. Although this has been primarily considered as a problem important to research, it also has many significant implications in medical education and ultimately in medical practice. In recent years, serious concern has been expressed in regard to the financial needs of medical schools if they are to meet their educational obligations. It seems likely that there has been greater support of research than education, and any such imbalance cannot long be maintained without serious consequences. Shannon* has recently discussed this problem and concluded "that in the long run, the best approach to either private or public support of medical research may not be to aid research solely by direct support for this function. Rather, it may be wise to strengthen the medical school and universities totally and quite directly, leaving to them more independence in arriving at decisions as to the relative emphasis to be given to the research and teaching functions. If such an approach were followed, funds for general construction would be provided, rather than funds for research construction alone. Funds for general operating expenses would be provided as well as funds for fellowships, for current support of research, or for other limited objectives." These and many similar matters are of vital importance to the three fields of research, education, and practice in medicine.

## CONCLUSIONS AND RECOMMENDATIONS OF COUNCIL ON MEDICAL SERVICE RELATING TO PRIVATE PRACTICE OF CLINICAL FACULTY PERSONNEL AND ADOPTION BY HOUSE OF DELEGATES OF THE REPORT, JUNE, 14, 1956

In the 1955 Annual Report on Medical Education in the United States and Canada, attention was drawn to the problems that had developed in some areas in regard to the activities of full-time clinical faculty personnel in the private practice of medicine. Difficulties and misunderstandings existed in connection with the utilization and interpretation of the word "geographic" as applied to some clinical faculty personnel otherwise designated "full time." The manner of collection and utilization of fees for professional services rendered and the implications of the corporate practice of medicine were matters of concern to the profession in some instances. It was obvious that there had been little or no liaison between some medical schools and the medical profession in certain situations. In a few of the tax-supported institutions, there were wide areas of disagreement, misunderstanding, and even hostility between the local profession and the medical school over arrangements between the institution and its clinical faculty personnel. These problems had assumed particular importance in connection with the developmental programs of some of the new medical schools and in the expansion of full-time clinical faculty personnel in some of the long-established institutions.

This problem area was given emphasis by the introduction of the Culpepper resolution at the meeting of the House of Delegates of the American Medical Association in Miami in December, 1954. This resolution was directed against "the practice of medicine" by personnel of tax-supported medical schools and requested the establishment of a definite policy on the part of the American Medical Association in regard to such matters. The Council on Medical Service of the American Medical Association was subsequently requested to conduct an inquiry into the practices of medical schools in the employment of clinical faculty personnel.

An advisory committee with representation from the Council on Medical Education and Hospitals, the Association of American Medical Colleges, and the American Hospital Association was appointed by the Council on Medical Service. This committee participated in the formulation of a questionnaire designed to obtain comprehensive information from the medical schools. The Council on Medical Service designed questionnaires for local and state medical societies in areas where medical schools are located. All answers to the questionnaires were analyzed and studied by the Committee on Medical and Related Facilities of the Council on Medical Service. This committee conducted hearings at which representatives of medical schools and medical societies were invited to present their respective points of view.

The problems centered around the area of clinical full-time faculty appointments were felt to be of such importance that the Council on Medical Education and Hospitals co-sponsored with the Council on Medical Service a half-day program devoted to these matters at the Annual Congress on Medical Education and Licensure in February, 1956. The Council on Medical Service reported on the initial findings obtained through the three sets of questionnaires at that time. Representatives of the medical profession and of the medical schools presented statements interpreting their respective points of view, and open discussion followed.

In the interval between the Congress on Medical Education and Licensure in February and the meeting of the American Medical Association in June, 1956, the Committee on Medical and Related Facilities completed its study and the Council on Medical Service prepared its report and recommendations for the House of Delegates of the American Medical Association. During this interval, a meeting of the Advisory Committee was held to review the report and recommendations. Because of conflicting commitments, members of the Advisory Committee representing the Association of American Medical Colleges were unable to attend this meeting.

The Committee on Medical and Related Facilities devoted a great deal of time and effort to the study of data received from the medical schools and from local and state medical societies and to a sincere analysis of the over-all problems presented. There was considerable variation in the interpretation of the degree and significance of the problem on the part of some of the institutions and professional societies. Much misunderstanding and disagreement was centered around the use of the term "geographic" as applied to clinical faculty who were indicated to be "full time" but who were paid basic salaries by the respective institutions, which necessitated that they

augment income through the means of private practice. One of the objectives of the committee, therefore, became centered around the definition and interpretation of terminology utilized in designating the status of clinical faculty personnel. The committee, realizing the importance and essential nature of medical education and the fundamental role played by medical schools, endeavored to make the study, the report, and their recommendations thoroughly objective.

At the June, 1956, meeting of the House of Delegates of the American Medical Association, the Council on Medical Service presented the conclusions and recommendations reached during the study they had pursued over a period of 18 months, with the suggestion that action be deferred for six months to permit adequate study during the intervening period. The report of the Council on Medical Service was referred to the Reference Committee on Insurance and Medical Service, which, after conducting its hearings, recommended the report to the House of Delegates for immediate adoption. Subsequently, the House of Delegates voted the adoption of the "Conclusions and Recommendations" of the Council on Medical Service in regard to Private Practice by Medical School Faculty Members. Because of the basic importance of this matter and the values inherent in its solution, these "Conclusions and Recommendations" as adopted by the House of Delegates are presented in full for the information of those who review this annual report on medical education.

## Conclusions and Recommendations

In this survey it was found that to a varying degree controversy exists between medical schools and the physicians in private practice, as is alleged in the Culpepper resolution, and that, when the replies of the deans and the officers of the medical associations are considered and compared, there are differences of opinion as to the extent of this disagreement. This main controversy arises out of the question of the medical school or its full time faculty entering into the private practice of medicine.

Historically, we find ourselves somewhat in the same position that we were in prior to 1913 at which time the concept of a full time faculty was developed, primarily to improve the quality of medical education, but also to avoid conflicts between the local medical profession and the faculties of medical schools. However, presently the concept of the "absolute" full time teacher is being modified because of economic and other pressures. As a result there are sharp differences of opinion on the matter of private practice between the local profession and the medical schools. These differences have been brought to the fore because of such factors as the establishment of new medical schools, the extension of medical school curricula from two to four years, and the construction of new medical school hospitals.

It is evident from all facts and data available to the Council that most, if not all, medical schools permit the so-called full time faculty members to engage in private practice. In various areas, this has been a common procedure for many years, and while differences of opinion between the practicing physicians and the medical schools have arisen, many of these have apparently been mutually resolved.

### COMPENSATION OF TEACHERS

The Council is fully cognizant that many of the methods of compensating teachers of medicine leave much to be desired and some are to be condemned entirely because of the fact that the teachers may be exploited by the institutions they serve. Everything considered, the Council believes that some fundamental principles should be formulated in regard to these problems and accordingly presents the following conclusions and recommendations in the hope that they will assist medical societies and medical schools in developing programs which will be satisfactory to all concerned—the students, the teachers, and the practicing profession, so that in the end the public may receive the best possible medical care.

### DEFINITIONS

A great deal of confusion exists in regard to the present terminology used by medical schools to describe the status of their clinical faculty members. It is, therefore, recommended that the Council on Medical Education and Hospitals and the Association of American Medical Colleges adopt the following uniform definitions and that both take it upon themselves to urge all medical schools to adopt these definitions. Such action it is believed will make for better understanding and pave the way for amicable settlement of present conflicts and opinions.

The full time faculty member is one who devotes all his time to the service of the medical school and receives all his professional compensation from a salary paid by the medical school.

Part time faculty members receive a salary from the medical school; but they may be divided into two groups:

A. Physicians in the first group have medical school service as a major interest and usually conduct their private practice from facilities of the medical school. (This group includes many physicians called "absolute full time" and most physicians called "geographical full time" under present medical school terminology.)

B. Physicians in the second group have private practice as their major interest, utilize medical school facilities for teaching, and conduct their private practice from their own offices elsewhere.

A volunteer faculty member is a member of the faculty who receives no salary for his services to the medical school.

### LIAISON

The Council has found that much of the present conflict in opinions has resulted from a failure in liaison between the practicing profession and the medical schools. In most instances of present conflict the profession and the schools worked hand in hand to build a good medical school and erect a teaching hospital. Yet, on completion of such joint endeavors, all too frequently the initial spirit of cooperation and working liaison seems to have disappeared. In view of this, it is recommended that adequate liaison be developed and maintained between each county medical society and any medical school or schools in its area and between each state medical association and any medical schools in the state. Such liaison should be the primary function of some committee of the state or county medical society, and methods should be developed so as to maintain communication between medical society committees within each state.

Medical society activity alone will not serve to maintain proper liaison. Accordingly, it is also recommended that the Council on Medical Education and Hospitals and the Association of American Medical Colleges urge all medical schools to assist and work with medical societies and associations in developing such liaison and urge them to confer with these committees whenever problems, questions, or policies arise that may concern private practice or in which the medical profession may be of assistance to the schools.

In this study, it was evident that a large percentage of the medical school faculties is still in the part time and volunteer categories. Complaints were made by deans that in some instances these men failed to fulfill their obligations to the school. Medical societies and associations complained that sufficient recognition was not given to these men for their services, mainly in the matter of policy determination. The Council recommends that when appointed, the services of volunteer and part time men should be properly utilized and recognized by the medical school and these men should serve the school to the best of their ability.

It is further recommended that on request of a medical society or a medical school, the American Medical Association's Board of Trustees establish, in cooperation with the Association of American Medical Colleges, a special committee whose function would be to investigate areas where there is friction between the medical school and the profession. Such a committee might (1) assure the continuation of liaison, (2) see to it that all data and facts are made available to all concerned and (3) seek to resolve differences of opinion.

### AVAILABILITY OF PATIENTS FOR TEACHING PURPOSES

It is evident to the Council that medical service and medical education have become quite complex. Economic factors, such as voluntary health insurance, extension of welfare benefits, increasing costs of hospitalization, etc., have created new facets to the problem of medical education, and especially have lessened the volume of indigent and medically indigent patients. Therefore, the Council recommends that all patients treated in medical school facilities be available for teaching purposes.

### FULL TIME FACULTY

It is evident from the information available to the Council that at the present time, in the opinion of both the medical schools and the medical societies replying to the questionnaire, income from private practice is necessary to attract and keep some portion of the clinical faculty. Our survey indicates that this seems to be more true in the case of private schools than in government schools.

It is the Council's belief that a nucleus of "full time" clinical faculty members in the medical school is necessary. The Council believes that as a general rule, the "full time" clinical faculty members, as herein defined, should not be permitted private practice but should be paid an adequate salary by the medical school. Exceptions because of legal or local conditions may be necessary. The number and types of such "full time" faculty members as are deemed necessary rest with each school, but in any event their salaries should be adequate and attractive enough to hold capable teachers.

TABLE 15.—*Schools, Students, and Graduates in the Medical and Basic Sciences Schools in the United States, 1931-1956*

| Year | Schools | First Yr. | Second Yr. | Third Yr. | Fourth Yr. | Total | Graduates |
|---|---|---|---|---|---|---|---|
| 1930-1931 | 76 | 6,456 | 5,538 | 5,080 | 4,908 | 21,982 | 4,735 |
| 1931-1932 | 76 | 6,200 | 5,462 | 4,932 | 4,885 | 22,135 | 4,936 |
| 1932-1933 | 77 | 6,426 | 5,479 | 5,017 | 4,948 | 22,466 | 4,895 |
| 1933-1934 | 77 | 6,457 | 5,571 | 4,988 | 4,937 | 22,799 | 5,085 |
| 1934-1935 | 77 | 6,356 | 5,642 | 5,142 | 4,905 | 22,888 | 5,101 |
| 1935-1936 | 77 | 6,605 | 5,458 | 5,230 | 5,020 | 22,564 | 5,183 |
| 1936-1937 | 77 | 5,910 | 5,269 | 5,140 | 5,158 | 22,095 | 5,377 |
| 1937-1938 | 77 | 5,791 | 5,225 | 4,986 | 5,036 | 21,587 | 5,194 |
| 1938-1939 | 77 | 5,764 | 5,160 | 4,947 | 4,921 | 21,302 | 5,089 |
| 1939-1940 | 77 | 5,794 | 5,177 | 4,921 | 4,894 | 21,271 | 5,097 |
| 1940-1941 | 77 | 5,837 | 5,254 | 4,969 | 4,849 | 21,379 | 5,275 |
| 1941-1942 | 77 | 6,218 | 5,406 | 5,087 | 4,942 | 22,031 | 5,163 |
| 1942-1943 | 76 | 6,425 | 5,828 | 5,278 | 5,100 | 22,631 | 5,223 |
| 1943-1944 | 77 | 6,561 | 6,071 | 5,640 | 5,257 | 23,529 | 5,134 |
| 1944 (2nd. Session) | 77 | 6,648 | 6,140 | 6,084 | 5,794 | 24,666 | 5,169 |
| 1944-1945 | 77 | 6,523 | 5,979 | 5,700 | 5,826 | 24,028 | 5,136 |
| 1945-1946 | 77 | 6,060 | 5,750 | 5,751 | 5,655 | 23,216 | 5,826 |
| 1946-1947 | 77 | 6,564 | 5,575 | 5,767 | 5,994 | 23,900 | 6,389 |
| 1947-1948 | 77 | 6,487 | 5,758 | 5,154 | 5,340 | 22,739 | 5,543 |
| 1948-1949 | 78 | 6,688 | 6,194 | 5,702 | 5,086 | 23,670 | 5,094 |
| 1949-1950 | 79 | 7,042 | 6,344 | 6,079 | 5,638 | 25,103 | 5,553 |
| 1950-1951 | 79 | 7,177 | 6,690 | 6,263 | 6,056 | 26,186 | 6,135 |
| 1951-1952 | 79 | 7,436 | 6,864 | 6,577 | 6,195 | 27,076 | 6,080 |
| 1952-1953 | 79 | 7,425 | 7,063 | 6,725 | 6,475 | 27,688 | 6,668 |
| 1953-1954 | 80 | 7,449 | 7,068 | 6,983 | 6,727 | 28,227 | 6,861 |
| 1954-1955 | 81 | 7,576 | 7,104 | 6,957 | 6,946 | 28,583 | 6,977 |
| 1955-1956 | 82 | 7,686 | 7,174 | 6,893 | 6,886 | 28,639 | 6,845 |
| Including data for schools developing new programs which have not yet been approved would increase the totals by the following figures | | | | | | | |
| 1955-1956 | 83 | 7,742 | 7,174 | 6,946 | 6,886 | 28,748 | 6,845 |

### PART TIME FACULTY

Over and beyond this nucleus of "full time" faculty members every school has a large number of clinical teachers who are and should be classified as "part time." These are so classified in the revised definitions recommended by the Council and include many physicians now classified under medical school terminology as "absolute full time" and most of these classified as "geographical full time."

There seems to be no question concerning the privilege of private practice by "part time" faculty members. There are, however, two basic questions to be kept in mind. The first is: What portion of the physician's time should be spent in teaching and what portion in private practice? The second question is: Where should the physician be permitted his private practice?

In regard to the first question, it is evident that even now all schools make some effort to limit private practice privileges as shown in the report on the survey itself. The extent to which these limitations are successful and to which they are actually providing a dividing line between teaching responsibility and private practice could not be accurately determined. However, the Council believes it is a primary responsibility of the administrators of medical schools to exercise adequate controls over the extent of private practice so as to maintain a proper relationship between teaching responsibilities and private practice.

The second question having to do with the place of practice seems to be the primary object of criticism in a number of areas, particularly in relation to government supported schools. Here the teaching physician is accused of using tax-supported facilities to assist him in developing an income from private practice. The Council believes that all "part time" faculty members should have the privilege of private practice. Such a privilege, however, should carry with it certain restrictions similar to those now utilized by most schools. As mentioned before, such restrictions should begin with a limitation as to the "amount of time" the physician may devote to private practice so as not to jeopardize the primary educational function of the medical school or of the individual teacher. The Council believes that charges should be made, where possible under the existing laws of the state, to the physician for all facilities and personnel involved in his private practice, pro-rated in accord with the use of such facilities in his private practice.

### PUBLICITY

Considerable criticism has come to the attention of the Council against local publicity given or sought by medical schools with reference to the work of individual staff members. We recommend that publicity emanating from a medical school should be in good taste and of a type which has the approval of the general medical community of that area.

### CULPEPPER RESOLUTION

Finally, the Council would like to refer to the resolution introduced into the House of Delegates at the Clinical Session in 1954 by J. P. Culpepper, Jr. of Mississippi. The intent of this resolution would seem to be that the principle involved in a state-supported medical school using private practice as a source of funds for the general operation of a school or its hospital is contrary to medical ethics, and is, in effect, the corporate practice of medicine and state socialism. We recommend that it be the policy of the American Medical Association that funds received from the private practice of medicine by salaried members of the clinical faculty of the medical school or hospital should not accrue to the general budget of the institution and that the initial disposition of fees for medical service from paying patients should be under the direct control of the doctor or doctors rendering the service.

It is the firm policy of the American Medical Association, and in this policy the Council heartily concurs that only a licensed doctor of medicine should practice medicine. It is not in the public or professional interest for a third party to derive a profit from payment received for medical services, nor is it in the public or professional interest for a third party to intervene in the physician-patient relationship.

Nothing in this report is meant to condone the corporate practice of medicine or policies which result in the diversion of physician's fees to a corporation or governmental agency.*

## MEDICAL STUDENTS

### ENROLLMENTS

For the seventh consecutive year, the number of students enrolled in approved medical schools in the United States has established a new record. Complete enrollment data for the individual schools are shown in table 1. Comparative data for this and preceding years are given in table 15. In order to present a true picture of medical education in the United States, table 1 and table 15 contain additions in the appropriate columns as shown of the students in the de-

*Added by the House of Delegates

TABLE 16.—*Geographical Source of*

| | SCHOOL | Alabama | Arizona | Arkansas | California | Colorado | Connecticut | Delaware | Dist. of Columbia | Florida | Georgia | Idaho | Illinois | Indiana | Iowa | Kansas | Kentucky | Louisiana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 1 | Medical College of Alabama | 81 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 2 | University of Arkansas | .. | .. | 93 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 3 | College of Medical Evangelists | .. | 1 | .. | 76 | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | .. |
| 4 | University of Southern California School of Medicine | .. | .. | .. | 60 | 1 | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 | .. |
| 5 | Stanford University School of Medicine | .. | 2 | .. | 47 | 1 | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. |
| 6 | University of California School of Medicine, San Francisco | .. | 1 | .. | 76 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 7 | University of California School of Medicine, Los Angeles | .. | 2 | .. | 48 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 8 | University of Colorado School of Medicine | .. | 3 | .. | .. | 70 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 9 | Yale University School of Medicine | .. | .. | .. | 3 | .. | 16 | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | 1 | .. |
| 10 | Georgetown University School of Medicine | .. | .. | .. | .. | .. | 5 | .. | 6 | 3 | .. | .. | 1 | 1 | .. | .. | .. | .. |
| 11 | George Washington University School of Medicine | 1 | .. | .. | 14 | .. | 4 | 1 | 14 | 2 | .. | 1 | .. | .. | .. | 1 | .. | .. |
| 12 | Howard University College of Medicine | 4 | .. | .. | .. | .. | .. | .. | 15 | 2 | .. | .. | 2 | 1 | .. | .. | .. | 2 |
| 13 | University of Miami School of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | 73 | .. | .. | .. | .. | .. | .. | .. | .. |
| 14 | Emory University School of Medicine | 3 | .. | .. | 1 | .. | .. | .. | 1 | 23 | 36 | .. | .. | .. | .. | .. | .. | 1 |
| 15 | Medical College of Georgia | .. | .. | .. | .. | .. | .. | .. | .. | .. | 100 | .. | .. | .. | .. | .. | .. | .. |
| 16 | Chicago Medical School | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 3 | .. | .. | .. | .. | .. |
| 17 | Northwestern University Medical School | .. | 2 | .. | 9 | 1 | .. | .. | .. | 1 | .. | 2 | 51 | 4 | 1 | 2 | 2 | .. |
| 18 | Stritch School of Medicine of Loyola University | .. | 1 | .. | 3 | .. | .. | .. | .. | .. | .. | .. | 56 | 1 | 1 | .. | .. | .. |
| 19 | University of Chicago, The School of Medicine | .. | .. | .. | 3 | 1 | .. | .. | .. | .. | .. | 1 | 29 | 3 | 1 | .. | .. | .. |
| 20 | University of Illinois College of Medicine | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | 164 | .. | .. | .. | .. | .. |
| 21 | Indiana University School of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 148 | .. | .. | .. | .. |
| 22 | State University of Iowa College of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | .. | 112 | .. | .. | .. |
| 23 | University of Kansas School of Medicine | .. | .. | .. | 2 | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 85 | .. | .. |
| 24 | University of Louisville School of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 5 | .. | .. | 88 | .. |
| 25 | Louisiana State University School of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 125 |
| 26 | Tulane University of Louisiana School of Medicine | 9 | 1 | 3 | 1 | .. | 1 | .. | .. | 20 | 3 | .. | 2 | 1 | .. | 1 | 3 | 35 |
| 27 | Johns Hopkins University School of Medicine | 1 | 1 | .. | 6 | .. | 4 | .. | 1 | 2 | .. | 1 | 1 | 1 | 1 | 1 | .. | .. |
| 28 | University of Maryland School of Medicine | .. | .. | .. | .. | .. | .. | .. | 4 | 2 | 1 | .. | .. | 1 | .. | .. | .. | .. |
| 29 | Boston University School of Medicine | .. | .. | .. | 1 | .. | 4 | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. |
| 30 | Harvard Medical School | 2 | .. | 2 | 3 | 1 | 5 | 1 | 2 | 2 | .. | .. | 4 | 1 | 3 | .. | 1 | .. |
| 31 | Tufts University School of Medicine | .. | .. | .. | .. | .. | 12 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 32 | University of Michigan Medical School | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | 3 | 2 | .. | .. | .. | .. |
| 33 | Wayne State University College of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 34 | University of Minnesota Medical School | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | .. | .. | 1 |
| 35 | University of Mississippi School of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 36 | University of Missouri School of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 37 | St. Louis University School of Medicine | 1 | .. | 1 | 9 | 1 | 1 | .. | 1 | .. | 1 | .. | 8 | 1 | .. | .. | 1 | 1 |
| 38 | Washington University School of Medicine | 1 | 1 | .. | 8 | 2 | .. | .. | .. | 2 | .. | 1 | 7 | 2 | 3 | .. | .. | .. |
| 39 | Creighton University School of Medicine | .. | .. | .. | 11 | 3 | .. | .. | .. | .. | .. | 2 | 3 | .. | 7 | 1 | .. | .. |
| 40 | University of Nebraska College of Medicine | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | .. | .. | .. |
| 41 | Dartmouth Medical School | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | .. | .. | .. | .. |
| 42 | Albany Medical College | .. | .. | .. | .. | .. | 2 | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | .. |
| 43 | University of Buffalo School of Medicine | .. | .. | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. |
| 44 | Columbia University College of Physicians and Surgeons | 1 | .. | .. | 1 | .. | 5 | .. | 3 | .. | 1 | .. | .. | 1 | .. | .. | 3 | .. |
| 45 | Cornell University Medical College | .. | .. | .. | 1 | .. | 4 | .. | .. | .. | 3 | .. | 1 | .. | .. | .. | 1 | .. |
| 46 | New York Medical College, Flower and Fifth Avenue Hospitals | .. | .. | .. | .. | .. | 12 | .. | .. | 1 | .. | .. | .. | 1 | .. | .. | .. | .. |
| 47 | New York University College of Medicine | .. | .. | .. | 1 | .. | 3 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| 48 | State University of New York College of Medicine, New York City | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 49 | State University of New York College of Medicine, Syracuse | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 50 | University of Rochester School of Medicine and Dentistry | .. | .. | .. | 3 | .. | 3 | .. | .. | .. | .. | .. | 2 | .. | 1 | .. | .. | .. |
| 51 | University of North Carolina School of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 52 | Duke University School of Medicine | 1 | .. | .. | 2 | .. | 2 | .. | 1 | 13 | 2 | .. | 3 | 1 | .. | .. | .. | 1 |
| 53 | Bowman Gray School of Medicine of Wake Forest College | .. | .. | .. | 1 | .. | .. | .. | 1 | 4 | .. | .. | 1 | .. | .. | .. | 3 | .. |
| 54 | University of North Dakota School of Medicine | .. | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 55 | University of Cincinnati College of Medicine | .. | .. | .. | 2 | .. | .. | .. | .. | 1 | .. | .. | .. | 4 | .. | .. | 10 | .. |
| 56 | Western Reserve University School of Medicine | .. | 1 | .. | 2 | .. | .. | .. | 2 | 1 | .. | .. | 3 | 1 | .. | .. | 2 | .. |
| 57 | Ohio State University College of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 58 | University of Oklahoma School of Medicine | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 59 | University of Oregon Medical School | .. | .. | .. | 2 | .. | .. | .. | .. | .. | 4 | .. | .. | .. | .. | .. | .. | .. |
| 60 | Hahnemann Medical College and Hospital of Philadelphia | 1 | .. | .. | 2 | .. | .. | 2 | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | .. |
| 61 | Jefferson Medical College of Philadelphia | .. | .. | .. | 1 | .. | 2 | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | 1 |
| 62 | Temple University School of Medicine | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. |
| 63 | University of Pennsylvania School of Medicine | .. | .. | .. | 3 | .. | 2 | 3 | .. | 4 | .. | .. | 2 | .. | .. | .. | 1 | .. |
| 64 | Woman's Medical College of Pennsylvania | .. | .. | 1 | 6 | .. | 1 | .. | .. | .. | .. | .. | 3 | 1 | .. | .. | .. | .. |
| 65 | University of Pittsburgh School of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 66 | Medical College of South Carolina | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 67 | University of South Dakota School of Medical Sciences | .. | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. | 2 | .. | 1 | .. | .. | .. |
| 68 | University of Tennessee College of Medicine | 4 | 2 | 6 | .. | .. | .. | .. | .. | 5 | 1 | .. | 1 | .. | .. | .. | 4 | .. |
| 69 | Meharry Medical College | 5 | .. | .. | 3 | .. | .. | .. | 1 | 6 | 10 | .. | 3 | 3 | .. | .. | .. | .. |
| 70 | Vanderbilt University School of Medicine | 4 | .. | 2 | 1 | .. | .. | .. | .. | 2 | .. | .. | 1 | 1 | .. | .. | 9 | .. |
| 71 | University of Texas Southwestern Medical School | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 72 | University of Texas Medical Branch | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 73 | Baylor University College of Medicine | 1 | .. | 1 | 4 | 2 | .. | .. | 1 | 2 | .. | 2 | 2 | 1 | .. | .. | 1 | .. |
| 74 | University of Utah School of Medicine | .. | 4 | .. | .. | .. | .. | .. | .. | .. | .. | 3 | .. | .. | .. | .. | .. | .. |
| 75 | University of Vermont College of Medicine | .. | .. | .. | .. | .. | 8 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 76 | University of Virginia Department of Medicine | .. | .. | .. | 1 | .. | .. | 2 | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. |
| 77 | Medical College of Virginia | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 1 |
| 78 | University of Washington School of Medicine | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 4 | .. | .. | .. | .. | .. | .. |
| 79 | West Virginia University School of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 80 | University of Wisconsin Medical School | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 81 | Marquette University School of Medicine | .. | .. | .. | 5 | .. | 1 | .. | .. | .. | .. | .. | 6 | 1 | 1 | .. | .. | .. |
| 82 | University of Puerto Rico School of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| | Totals | 120 | 22 | 109 | 434 | 83 | 99 | 10 | 54 | 180 | 159 | 22 | 378 | 188 | 137 | 92 | 133 | 168 |
| 83 | University of Alberta Faculty of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 84 | University of British Columbia School of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 85 | University of Manitoba Faculty of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 86 | Dalhousie University Faculty of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 87 | Queen's University Faculty of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 88 | University of Ottawa Faculty of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 5 | .. | .. | .. | .. | .. |
| 89 | University of Western Ontario Faculty of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 90 | University of Toronto Faculty of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 91 | McGill University Faculty of Medicine | .. | .. | .. | 8 | .. | 2 | .. | .. | .. | .. | .. | 1 | .. | 1 | .. | 1 | .. |
| 92 | University of Montreal Faculty of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 93 | Laval University Faculty of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 94 | University of Saskatchewan College of Medicine | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. |
| | Totals | .. | .. | .. | 8 | .. | 2 | .. | .. | .. | .. | .. | 7 | .. | 1 | .. | 1 | .. |
| | Grand totals | 120 | 22 | 109 | 442 | 83 | 101 | 10 | 54 | 180 | 159 | 22 | 385 | 188 | 138 | 92 | 134 | 168 |
| | Marginal No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |

* Figures are for students in beginning premedical year.

| 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maine | Maryland | Massachusetts | Michigan | Minnesota | Mississippi | Missouri | Montana | Nebraska | Nevada | New Hampshire | New Jersey | New Mexico | New York | North Carolina | North Dakota | Ohio | Oklahoma | Oregon | Pennsylvania | Rhode Island | South Carolina | South Dakota | Tennessee | Texas | Utah | Vermont | Virginia | Washington | West Virginia | Wisconsin | Wyoming | U. S. Territories and Possessions | Canada | Foreign | Home State | Out of State | Totals | Marginal Number |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 81 | 0 | 81 | 1 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | 7 | 93 | 0 | 93 | 2 |
| .. | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | .. | .. | 1 | .. | .. | 2 | .. | .. | .. | 76 | 23 | 99 | 3 |
| .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | 60 | 9 | 69 | 4 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 47 | 11 | 58 | 5 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 76 | 1 | 77 | 6 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 48 | 2 | 50 | 7 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 6 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 7 | .. | .. | 70 | 16 | 86 | 8 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 4 | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | .. | .. | .. | 1 | .. | 16 | 63 | 79 | 9 |
| .. | 1 | 9 | 1 | 1 | .. | 1 | 1 | .. | .. | .. | 10 | .. | 23 | 1 | .. | 2 | .. | .. | 14 | 4 | .. | .. | .. | .. | .. | .. | 1 | 4 | 1 | .. | .. | .. | .. | 1 | 6 | 109 | 115 | 10 |
| .. | 3 | 6 | 1 | .. | .. | .. | 1 | 1 | .. | 2 | 21 | .. | 36 | .. | .. | 4 | .. | .. | 14 | 4 | .. | .. | .. | 1 | 3 | .. | .. | 3 | 1 | 3 | .. | 1 | .. | .. | 14 | 88 | 102 | 11 |
| 1 | 8 | 2 | .. | 1 | .. | 1 | 1 | .. | .. | .. | 8 | .. | 13 | .. | .. | 3 | .. | .. | 9 | 2 | .. | .. | .. | 1 | .. | .. | .. | 1 | .. | 1 | .. | .. | .. | 9 | 15 | 64 | 79 | 12 |
| 1 | 1 | 2 | 1 | .. | .. | 1 | .. | .. | .. | .. | 3 | .. | 13 | 5 | .. | 2 | .. | .. | 5 | .. | 1 | .. | 2 | 1 | .. | .. | 5 | .. | .. | .. | .. | .. | .. | .. | 73 | 0 | 73 | 13 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 36 | 37 | 73 | 14 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 2 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 100 | 1 | 101 | 15 |
| .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 10 | .. | 55 | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | 3 | 70 | 73 | 16 |
| .. | .. | 1 | 9 | .. | .. | 3 | 1 | .. | .. | .. | 6 | .. | 9 | .. | .. | 9 | 1 | .. | 1 | 1 | .. | .. | .. | 2 | 1 | .. | 1 | 1 | 3 | 7 | 1 | 1 | .. | .. | 51 | 82 | 133 | 17 |
| .. | .. | 1 | 1 | 1 | 1 | .. | 1 | .. | .. | .. | 3 | .. | 3 | .. | .. | 10 | .. | .. | 2 | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 1 | .. | 1 | .. | 56 | 32 | 88 | 18 |
| .. | .. | 1 | 2 | 2 | .. | 2 | 2 | .. | .. | .. | 3 | .. | 12 | .. | .. | 1 | 1 | 2 | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 29 | 43 | 72 | 19 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 4 | 164 | 3 | 167 | 20 |
| .. | .. | .. | 1 | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | 148 | 7 | 155 | 21 |
| .. | .. | .. | .. | .. | .. | 10 | .. | .. | .. | .. | .. | .. | 4 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 112 | 8 | 120 | 22 |
| .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 85 | 16 | 101 | 23 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 88 | 9 | 97 | 24 |
| .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 125 | 1 | 126 | 25 |
| .. | .. | .. | .. | 2 | 19 | 4 | .. | .. | .. | .. | 1 | .. | 2 | .. | .. | 1 | 2 | 1 | 1 | .. | .. | .. | .. | 14 | .. | .. | .. | 1 | .. | 2 | 1 | 1 | .. | 2 | 35 | 96 | 131 | 26 |
| .. | 8 | 5 | 1 | .. | .. | 1 | .. | .. | .. | 1 | 3 | .. | 13 | 2 | .. | 3 | 2 | 1 | 3 | .. | 1 | .. | 1 | 3 | .. | 1 | .. | .. | 1 | 3 | .. | .. | 4 | .. | 8 | 66 | 74 | 27 |
| .. | 64 | 4 | .. | .. | .. | .. | .. | .. | .. | .. | 4 | .. | 1 | .. | .. | 2 | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 4 | .. | 64 | 32 | 96 | 28 |
| 1 | .. | 44 | .. | .. | .. | .. | .. | .. | .. | .. | 4 | .. | 10 | .. | .. | .. | .. | .. | .. | 4 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | .. | 44 | 29 | 73 | 29 |
| 1 | .. | 15 | 2 | 1 | .. | 1 | .. | .. | .. | 1 | 6 | 1 | 27 | 2 | 1 | 9 | 1 | 1 | 5 | .. | .. | .. | 1 | 4 | 1 | .. | 1 | .. | 1 | 2 | .. | 2 | .. | 5 | 15 | 103 | 118 | 30 |
| 8 | .. | 60 | .. | .. | .. | .. | .. | .. | .. | 5 | 4 | .. | 13 | .. | .. | .. | .. | .. | .. | 8 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 60 | 51 | 111 | 31 |
| .. | .. | 1 | 178 | .. | .. | .. | .. | .. | .. | .. | 2 | .. | 2 | .. | .. | 7 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 3 | .. | 1 | .. | 178 | 28 | 206 | 32 |
| .. | .. | .. | 76 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 4 | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 2 | .. | .. | .. | .. | 76 | 0 | 76 | 33 |
| .. | .. | .. | .. | 118 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 118 | 10 | 128 | 34 |
| .. | .. | .. | .. | .. | 80 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 80 | 0 | 80 | 35 |
| .. | .. | .. | .. | .. | .. | 45 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | 2 | 3 | .. | .. | .. | 2 | .. | .. | .. | .. | 5 | .. | .. | .. | 5 | .. | 1 | 45 | 0 | 45 | 36 |
| .. | 1 | 1 | 5 | 10 | .. | 26 | 3 | .. | .. | 1 | 6 | 1 | 1 | .. | .. | 2 | 2 | 2 | 1 | 1 | .. | .. | 1 | 4 | 1 | .. | 1 | 2 | .. | 2 | .. | 1 | .. | 2 | 26 | 101 | 127 | 37 |
| .. | .. | 2 | .. | 1 | .. | 19 | 1 | 1 | .. | .. | 4 | .. | 6 | 1 | .. | 3 | 3 | 2 | 1 | 1 | .. | .. | .. | 1 | 5 | 1 | .. | 1 | 2 | .. | 2 | .. | 1 | .. | 19 | 68 | 87 | 38 |
| .. | .. | .. | 1 | 4 | .. | 3 | .. | 15 | .. | .. | 4 | .. | 7 | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | 3 | .. | .. | .. | .. | 6 | .. | .. | 1 | .. | .. | .. | 15 | 61 | 76 | 39 |
| .. | .. | .. | .. | .. | .. | .. | .. | 81 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 81 | 6 | 87 | 40 |
| .. | .. | 2 | 1 | .. | .. | .. | .. | 1 | .. | 3 | 3 | .. | 7 | .. | .. | 2 | .. | .. | 2 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | 22 | 25 | 41 |
| .. | .. | 2 | 1 | .. | .. | .. | .. | .. | .. | .. | 3 | .. | 48 | .. | .. | 1 | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 4 | 48 | 16 | 64 | 42 |
| .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 3 | .. | 77 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 77 | 8 | 85 | 43 |
| .. | 1 | 6 | 1 | .. | 1 | .. | .. | .. | .. | 1 | 19 | .. | 51 | 1 | .. | 11 | 1 | .. | 4 | .. | 1 | .. | 1 | .. | 1 | .. | 1 | .. | 1 | 1 | .. | .. | 1 | 51 | 68 | 119 | 44 |
| .. | .. | 7 | 1 | .. | .. | .. | .. | 1 | .. | 1 | 18 | .. | 39 | .. | .. | 1 | .. | .. | 2 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | 1 | .. | 1 | 39 | 45 | 84 | 45 |
| .. | .. | 16 | .. | .. | .. | .. | .. | .. | .. | 1 | 20 | .. | 66 | .. | .. | .. | .. | .. | 3 | 5 | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | 66 | 62 | 128 | 46 |
| .. | .. | 4 | .. | .. | .. | .. | .. | .. | .. | .. | 18 | .. | 99 | .. | .. | .. | .. | .. | 3 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 99 | 32 | 131 | 47 |
| .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 7 | .. | 141 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 141 | 10 | 151 | 48 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | 75 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 2 | 75 | 5 | 80 | 49 |
| .. | 2 | 7 | 1 | 1 | .. | .. | 1 | .. | .. | .. | 3 | .. | 37 | .. | .. | 3 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 2 | 3 | .. | .. | 37 | 34 | 71 | 50 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 65 | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 65 | 3 | 68 | 51 |
| .. | 2 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 2 | .. | 5 | 24 | .. | 1 | 1 | .. | 1 | .. | 4 | .. | 1 | .. | .. | .. | 4 | .. | 4 | .. | .. | 1 | .. | 1 | 24 | 53 | 77 | 52 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | 5 | 28 | .. | .. | .. | .. | .. | 3 | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | .. | .. | .. | .. | 3 | 28 | 26 | 54 | 53 |
| .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 34 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 34 | 6 | 40 | 54 |
| .. | .. | 1 | .. | .. | .. | .. | 2 | .. | .. | .. | 2 | .. | 1 | .. | .. | 66 | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 2 | .. | 1 | .. | .. | 66 | 27 | 93 | 55 |
| .. | 1 | 2 | 1 | 1 | .. | .. | .. | .. | .. | .. | 1 | .. | 5 | .. | .. | 49 | .. | .. | 6 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 4 | 49 | 34 | 83 | 56 |
| .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 151 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 151 | 0 | 151 | 57 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 99 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 4 | .. | .. | .. | 1 | .. | 1 | 99 | 2 | 101 | 58 |
| .. | .. | .. | .. | 1 | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 62 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 62 | 15 | 77 | 59 |
| .. | 1 | 2 | 1 | 1 | .. | .. | .. | .. | .. | .. | 18 | .. | 2 | .. | .. | .. | .. | .. | 73 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | .. | 1 | .. | 1 | 73 | 36 | 109 | 60 |
| .. | .. | 4 | .. | .. | .. | .. | .. | .. | .. | .. | 21 | .. | 5 | 1 | .. | 2 | .. | .. | 123 | 2 | .. | .. | .. | 1 | .. | .. | .. | .. | 6 | .. | .. | 2 | 1 | 1 | 123 | 53 | 176 | 61 |
| .. | 1 | 2 | 1 | 1 | .. | .. | .. | .. | .. | .. | 15 | .. | 7 | .. | .. | 2 | 1 | .. | 92 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 7 | 92 | 36 | 128 | 62 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 13 | .. | 4 | 3 | .. | 3 | .. | .. | 77 | 1 | .. | .. | .. | 1 | .. | .. | .. | 1 | .. | .. | .. | 1 | .. | .. | 77 | 48 | 125 | 63 |
| 1 | 2 | 2 | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | 14 | .. | .. | 1 | .. | .. | 15 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 15 | 36 | 51 | 64 |
| 1 | .. | 4 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | 1 | .. | 94 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 94 | 6 | 100 | 65 |
| .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 79 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 79 | 0 | 79 | 66 V |
| .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 35 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 35 | 7 | 42 | 67 |
| .. | .. | 2 | .. | .. | 7 | 6 | .. | 1 | .. | .. | .. | .. | 1 | 4 | .. | .. | 4 | .. | 1 | .. | 3 | .. | 158 | 4 | .. | .. | 1 | .. | 1 | .. | .. | 1 | .. | .. | 158 | 59 | 217 | 68 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 2 | 9 | .. | .. | .. | .. | .. | .. | 7 | .. | .. | 8 | 3 | .. | .. | 4 | .. | .. | .. | .. | .. | 2 | 8 | 67 | 75 | 69 |
| .. | 1 | .. | 3 | .. | 4 | .. | .. | .. | .. | .. | .. | .. | 3 | .. | .. | 2 | 1 | .. | .. | .. | .. | .. | 21 | .. | .. | .. | 1 | .. | .. | .. | 1 | .. | 1 | 21 | 30 | 51 | 70 |
| .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 102 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 102 | 0 | 102 | 71 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 106 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 106 | 0 | 106 | 72 |
| .. | .. | 2 | .. | 1 | .. | 4 | 1 | .. | .. | .. | .. | 3 | 3 | .. | .. | 3 | 5 | .. | 1 | .. | .. | .. | .. | 42 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 4 | 42 | 45 | 87 | 73 |
| .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 45 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 45 | 9 | 54 | 74 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 16 | .. | .. | .. | .. | .. | .. | .. | .. | 16 | 34 | 50 | 75 |
| 6 | .. | 9 | .. | .. | .. | .. | .. | .. | .. | 7 | 1 | .. | 2 | .. | .. | 2 | .. | .. | 3 | .. | .. | .. | 1 | .. | .. | .. | 52 | .. | 5 | .. | .. | .. | 1 | 52 | 25 | 77 | 76 |
| .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | 5 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 | .. | .. | .. | 69 | .. | 1 | .. | 1 | .. | 2 | 69 | 15 | 84 | 77 |
| 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | .. | .. | 2 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | 67 | .. | .. | .. | .. | 1 | .. | 67 | 10 | 77 | 78 |
| .. | .. | .. | .. | 1 | .. | .. | 3 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 81 | .. | 1 | .. | .. | 81 | 3 | 87 | 80 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 31 | .. | .. | .. | .. | .. | 31 | 0 | 31 | 79 |
| 1 | 1 | .. | 4 | 4 | .. | .. | 2 | .. | .. | .. | 2 | .. | 6 | .. | .. | 8 | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | 4 | 1 | 51 | .. | 1 | .. | 1 | 51 | 51 | 102 | 81 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 50 | .. | 1 | 50 | 2 | 52 | 82 |
| 22 | 100 | 230 | 206 | 155 | 113 | 129 | 24 | 101 | 2 | 23 | 282 | 12 | 908 | 150 | 39 | 391 | 127 | 74 | 561 | 33 | 102 | 41 | 201 | 355 | 56 | 20 | 150 | 103 | 69 | 163 | 13 | 88 | 5 | 97 | 5,300 | 2,386 | 7,686 | |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 58 | .. | 58 | 0 | 58 | 83 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 58 | 2 | 58 | 2 | 60 | 84 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 63 | 7 | 63 | 9 | 72 | 85 |
| .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 51 | 4 | 51 | 5 | 56 | 86 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 60 | .. | 60 | 5 | 65* | 87 |
| .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 4 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 51 | 5 | 51 | 19 | 70 | 88 |
| .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 2 | 1 | .. | 4 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 55 | 1 | 55 | 2 | 57 | 89 |
| .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 131 | .. | 131 | 0 | 131* | 90 |
| .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. | 1 | 3 | .. | 21 | .. | .. | 1 | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | 1 | .. | 5 | .. | 1 | .. | .. | 58 | 6 | 58 | 57 | 115 | 91 |
| 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 128 | .. | 128 | 1 | 129 | 92 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 158 | .. | 158 | 1 | 159 | 93 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 38 | 3 | 38 | 3 | 41 | 94 |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 909 | 26 | 909 | 104 | 1,013 | |
| 1 | .. | 3 | 1 | 2 | .. | .. | .. | .. | .. | 5 | 4 | .. | 29 | .. | .. | 1 | .. | 1 | 2 | 2 | .. | .. | 1 | .. | .. | 1 | .. | 5 | .. | 1 | .. | .. | 914 | 123 | 6,209 | 2,490 | 8,699 | |
| 23 | 100 | 233 | 207 | 157 | 113 | 129 | 24 | 101 | 2 | 28 | 286 | 12 | 997 | 150 | 39 | 395 | 127 | 75 | 563 | 35 | 102 | 41 | 202 | 355 | 56 | 21 | 150 | 108 | 69 | 164 | 13 | 88 | | | | | | |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | |

veloping but not yet approved programs of the Albert Einstein School of Medicine and the third years of the Schools of Medicine of the University of Mississippi and the University of Missouri.

It should be noted that the figure in table 1 depicting total enrollment for the past two years included the special and part-time students, whereas before 1954-1955 only full-time students were shown. If the students enrolled in medical schools as special and part-time students were not included in either year, the present enrollment would still be slightly increased compared with last year. The addition of a total of 198 students by the newly approved University of Miami School of Medicine more than compensated for generally smaller classes. The median total enrollment in 1955-1956 was 335, compared to 338 in the preceding year, and the average total enrollment was 370 students, as compared with 375 in 1954-1955.

Five schools had a total enrollment each of more than 600. The University of Tennessee led in this respect with a total enrollment of 781. The University of Tennessee and the University of Michigan admitted more than 200 students to their entering classes (217 and 206 respectively). There were again this year six additional schools with first-year enrollments of 150 or more students.

The entering class was the largest total ever enrolled (table 1). Two-thirds of this increase occurred by the addition of the class at the University of Miami School of Medicine, as was anticipated last year. Only seven schools changed their entering class size by more than 5%, and the largest change was an almost 13% increase at the University of Mississippi coincidental to its development into a four-year school. The University of Maryland School of Medicine had a 9% increase (88 to 96) and Howard had an 8% increase compared with last year. The median first-year class for the four-year schools consisted of 87 students, and the average had 97 students. The median total enrollment was 335 and the average was 370 students.

Enrollment data for approved Canadian medical schools are given in table 2. Comparison of this with similar data for last year reveals a small increase in total enrollment and a larger increase, of 7%, in the size of the entering class. The largest changes in entering-class size occurred at the University of Toronto (increased 24%), Queen's (increased 14%), and the University of Ottawa, which increased its entering class by 11%. Those students enrolled in the premedical year and required intern year are not included in the total enrollment in table 2 nor in the comparisons made above in the text.

It is pertinent to note that 78 United States citizens were enrolled in the first medical year in Canadian schools as compared with five Canadian citizens enrolled in the first-year class of United States medical schools (table 16). More detailed information in regard to this can be found in the next section of this report.

## GEOGRAPHICAL SOURCE OF ENTERING STUDENTS

Information as to the state of permanent residence for entering students was derived from the enrollment data submitted by the medical schools. Table 16 presents the residence of students at the time of their enrollment in the approved medical schools in the United States and Canada.

This table indicates that 40% of all first-year students in the United States came from six states (New York, Pennsylvania, California, Ohio, Illinois, and Texas). It is interesting to note that the first-year enrollment of all the approved medical schools in these states represented 42% of the total enrollment for the nation and that almost 38% of all United States medical schools are located in the same states.

There were fewer than 14 first-year students in the medical schools in the United States from each of four states (Nevada, Delaware, New Mexico, and Wyoming), and fewer than 25 students from each of six other states (Vermont, Arizona, Idaho, Maine, New Hampshire, and Montana). Of these 10 states, only Vermont and New Hampshire have medical schools. The 57 students from the four states supplying the fewest medical students together with the 133 students from the six others represented only 2.4% of the total first-year class.

In table 17 are listed the states in ascending order according to the number of enrolled first-year medical students per 100,000 population. The six states with the largest number of first-year students are well scattered through this list, with half having less than the median number of students per 100,000 population (4.4) and half having the median number or more. With the exception of Vermont, the other nine states having the smallest number of first-year students enrolled in medical schools in all instances have fewer students than the median, five of them having the lowest freshman medical student representation.

Since last year's report, Florida and the District of Columbia have gained one or more first-year students per 100,000 population, 2.4 and 1.3 respectively. The gain by Florida is at least partly accounted for by the new University of Miami School of Medicine. These gains are balanced by five other states (New Mexico, Arizona, Idaho, Vermont, and Utah) whose student per population ratio decreased by one or more, leaving the national ratio and the median exactly the same.

There were 11 schools, all state owned, that limited enrollment to students resident in the state in which each school is located. This is two less than showed this restriction last year. It is perhaps pertinent that other residents of these same states, equal in number to 44% of the first-year enrollment of these 11 schools, were accepted in medical schools outside their own states. Legislative bodies could well consider the effect that adoption by all medical schools of similarly complete restrictive admission policies would have on the number of their own residents who would be able to acquire a medical education.

The section of table 16 that depicts the state of residence of students in Canadian medical schools is worthy of notice. There are 78 United States students

enrolled in the first medical year of the Canadian schools. Since there are only five Canadian students in the first-year class of American schools, the United States in reality is the recipient of a favorable balance that represents an educational opportunity equivalent to another American medical school.

United States first-year medical students in Canada came from 20 different states with New York (29), California (8), and Illinois (7) accounting for 56%

TABLE 17.—*Ratio of Freshman Students to State Populations, 1955-1956*

Numbers of Students per 100,000 Population* in the Approved Medical and Basic Science Schools of the United States

| | |
|---|---|
| † Nevada | .9 |
| † New Mexico | 1.5 |
| † Arizona | 2.2 |
| † Maine | 2.4 |
| † Delaware | 2.6 |
| Missouri | 3.1 |
| California | 3.3 |
| North Carolina | 3.5 |
| West Virginia | 3.5 |
| † Idaho | 3.6 |
| Maryland | 3.8 |
| † Montana | 3.8 |
| † Rhode Island | 3.9 |
| Alabama | 4.0 |
| Illinois | 4.0 |
| Washington | 4.0 |
| Michigan | 4.1 |
| New Hampshire | 4.1 |
| Texas | 4.2 |
| Virginia | 4.2 |
| Indiana | 4.3 |
| † Wyoming | 4.3 |
| Connecticut | 4.4 |
| Georgia | 4.4 |
| Kentucky | 4.4 |
| Ohio | 4.4 |
| Oregon | 4.4 |
| Wisconsin | 4.4 |
| Kansas | 4.5 |
| South Carolina | 4.5 |
| Massachusetts | 4.6 |
| Minnesota | 4.9 |
| Pennsylvania | 5.0 |
| Iowa | 5.1 |
| Florida | 5.2 |
| † New Jersey | 5.2 |
| Vermont | 5.3 |
| Colorado | 5.4 |
| Mississippi | 5.4 |
| Louisiana | 5.7 |
| Oklahoma | 5.9 |
| Tennessee | 5.9 |
| New York | 6.0 |
| Arkansas | 6.1 |
| North Dakota | 6.1 |
| South Dakota | 6.1 |
| District of Columbia | 6.3 |
| Utah | 7.2 |
| Nebraska | 7.3 |
| United States | 4.6 |

* Estimated July 1, 1955, total population excluding members of the Armed Forces stationed in each area, **Current Population Reports**, Series P.25, No. 129, Jan. 20, 1956.
† State with no medical school

of such students. All but two of the Canadian schools are involved, and McGill has 57 United States students in the first medical year. This is more than the first-year enrollment in seven of the approved four-year American schools.

## ENROLLMENT OF WOMEN STUDENTS

Information by school on the number of men and women students enrolled and graduated can be found in table 18. Dartmouth and Jefferson continued to limit their enrollment to men, and Women's Medical College enrolled only women. The number of women students again showed a small increase (2.3%) com-

TABLE 18.—*Distribution of Students and Graduates in the United States and Canada by Sex, 1955-1956*

| | Students | | Graduates | |
|---|---|---|---|---|
| **United States** | Men | Women | Men | Women |
| Medical College of Alabama | 281 | 15 | 68 | 5 |
| University of Arkansas | 297 | 20 | 59 | 3 |
| College of Medical Evangelists | 303 | 22 | 76 | 8 |
| University of Southern California | 230 | 12 | 64 | 4 |
| Stanford University | 216 | 20 | 56 | 6 |
| University of California, San Francisco | 295 | 19 | 76 | 3 |
| University of California, Los Angeles | 156 | 12 | 33 | 3 |
| University of Colorado | 292 | 23 | 64 | 8 |
| Yale University | 286 | 20 | 67 | 4 |
| Georgetown University | 412 | 29 | 105 | 5 |
| George Washington University | 356 | 16 | 84 | 4 |
| Howard University | 263 | 26 | 63 | 5 |
| University of Miami | 181 | 17 | 23 | 3 |
| Emory University | 277 | 7 | 69 | 2 |
| Medical College of Georgia | 338 | 14 | 65 | 2 |
| Chicago Medical School | 282 | 1 | 72 | 1 |
| Northwestern University | 500 | 23 | 129 | 5 |
| Stritch School of Medicine | 314 | 11 | 76 | 3 |
| University of Chicago | 268 | 18 | 69 | 2 |
| University of Illinois | 663 | 33 | 155 | 4 |
| Indiana University | 567 | 19 | 139 | 2 |
| State University of Iowa | 430 | 11 | 107 | 3 |
| University of Kansas | 415 | 13 | 120 | 0 |
| University of Louisville | 359 | 20 | 88 | 5 |
| Louisiana State University | 406 | 20 | 89 | 7 |
| Tulane University | 496 | 15 | 121 | 3 |
| Johns Hopkins University | 204 | 22 | 62 | 7 |
| University of Maryland | 364 | 11 | 96 | 3 |
| Boston University | 266 | 18 | 66 | 4 |
| Harvard Medical School | 496 | 34 | 143 | 8 |
| Tufts University Medical School | 424 | 19 | 109 | 2 |
| University of Michigan | 726 | 36 | 189 | 0 |
| Wayne State University | 268 | 13 | 61 | 2 |
| University of Minnesota | 457 | 24 | 109 | 6 |
| University of Mississippi | 129 | 5 | .. | .. |
| St. Louis University | 470 | 9 | 111 | 3 |
| University of Missouri | 85 | 3 | .. | .. |
| Washington University | 345 | 14 | 96 | 3 |
| Creighton University | 287 | 10 | 74 | 3 |
| University of Nebraska | 321 | 10 | 80 | 3 |
| Dartmouth Medical School | 48 | 0 | .. | .. |
| Albany Medical College | 212 | 9 | 47 | 1 |
| University of Buffalo | 283 | 13 | 59 | 3 |
| Columbia University | 414 | 48 | 104 | 14 |
| Cornell University | 317 | 21 | 79 | 5 |
| New York Medical College | 449 | 27 | 101 | 7 |
| New York University | 490 | 37 | 134 | 6 |
| State University of New York, New York City | 546 | 41 | 133 | 13 |
| State University of New York, Syracuse | 272 | 14 | 71 | 0 |
| University of Rochester | 260 | 13 | 60 | 4 |
| Duke University | 301 | 13 | 78 | 2 |
| University of North Carolina | 241 | 8 | 58 | 1 |
| Bowman Gray School of Medicine | 193 | 11 | 46 | 1 |
| University of North Dakota | 75 | 2 | .. | .. |
| Ohio State University | 554 | 19 | 139 | 5 |
| University of Cincinnati | 325 | 13 | 82 | 3 |
| Western Reserve University | 295 | 27 | 73 | 5 |
| University of Oklahoma | 366 | 13 | 95 | 1 |
| University of Oregon | 280 | 15 | 67 | 4 |
| Hahnemann Medical College | 379 | 20 | 91 | 4 |
| Jefferson Medical College | 677 | 0 | 171 | 0 |
| Temple University | 467 | 21 | 120 | 5 |
| University of Pennsylvania | 477 | 23 | 119 | 5 |
| University of Pittsburgh | 351 | 12 | 85 | 2 |
| Woman's Medical College of Pennsylvania | ... | 182 | .. | 40 |
| Medical College of South Carolina | 284 | 12 | 64 | 3 |
| University of South Dakota | 69 | 3 | .. | .. |
| Meharry Medical College | 245 | 14 | 60 | 2 |
| University of Tennessee | 746 | 35 | 190 | 9 |
| Vanderbilt University | 194 | 10 | 48 | 3 |
| Baylor University | 328 | 14 | 75 | 2 |
| Southwestern Medical School | 370 | 24 | 90 | 8 |
| University of Texas | 582 | 32 | 148 | 3 |
| University of Utah | 204 | 5 | 40 | 0 |
| University of Vermont | 170 | 10 | 42 | 2 |
| Medical College of Virginia | 339 | 27 | 91 | 7 |
| University of Virginia | 278 | 11 | 61 | 0 |
| University of Washington | 271 | 17 | 64 | 4 |
| West Virginia University | 57 | 3 | .. | .. |
| Marquette University | 377 | 17 | 84 | 3 |
| University of Wisconsin | 299 | 26 | 68 | 11 |
| University of Puerto Rico | 157 | 27 | 34 | 9 |
| Totals | 27,096 | 1,573 | 6,504 | 341 |
| **Canada** | | | | |
| University of Alberta | 206 | 10 | 57 | 2 |
| University of British Columbia | 205 | 17 | 56 | 4 |
| University of Manitoba | 231 | 9 | 58 | 6 |
| Dalhousie University | 201 | 13 | 50 | 1 |
| Queen's University | * 268 | 16 | 58 | 1 |
| University of Ottawa | † 199 | 6 | 31 | 1 |
| University of Toronto | ‡ 527 | 57 | 140 | 11 |
| University of Western Ontario | 216 | 15 | 52 | 6 |
| Laval University | 510 | 24 | 73 | 5 |
| McGill University | 400 | 26 | 101 | 7 |
| University of Montreal | 415 | 29 | 87 | 9 |
| University of Saskatchewan | 71 | 10 | .. | .. |
| Totals | 3,449 | 232 | 763 | 53 |
| Grand Totals | 30,515 | 1,805 | 7,267 | 384 |

* 59 men, 6 women premedical students excluded.
† 43 men, 8 women premedical students excluded.
‡ 227 men, 23 women premedical students excluded.

pared with the previous year, but the number of women graduates was again smaller than in the last year, the smallest in nine years.

Excluding Woman's Medical College, medical schools of two universities (Columbia and State University of New York, New York City) enrolled 40 or more women. The medical schools of three other universities enrolled 35 or more women (University of Michigan, New York University, and University of Tennessee). In only two medical schools did women account for 10% or more of the total enrollment (Columbia University and University of Puerto Rico). Women represented more than 10% of the graduating class of five schools (University of Puerto Rico, University of Wisconsin, Columbia University, University of Miami, and the University of Colorado).

TABLE 19.—*Women in Medicine in the United States, 1905-1956*

| Year | Women Students | Percentage of all Students | Women Graduates | Percentage of all Graduates |
|---|---|---|---|---|
| 1905 | 1,073 | 4.1 | 219 | 4.0 |
| 1910 | 907 | 4.0 | 116 | 2.6 |
| 1915 | 597 | 4.0 | 92 | 2.6 |
| 1920 | 818 | 5.8 | 122 | 4.0 |
| 1925 | 910 | 5.0 | 204 | 5.1 |
| 1926 | 935 | 5.0 | 212 | 5.4 |
| 1927 | 904 | 4.9 | 189 | 4.7 |
| 1928 | 929 | 4.5 | 207 | 4.9 |
| 1929 | 925 | 4.4 | 214 | 4.8 |
| 1930 | 955 | 4.4 | 204 | 4.5 |
| 1931 | 990 | 4.5 | 217 | 4.6 |
| 1932 | 955 | 4.3 | 208 | 4.2 |
| 1933 | 1,056 | 4.7 | 214 | 4.4 |
| 1934 | 1,020 | 4.5 | 211 | 4.2 |
| 1935 | 1,077 | 4.7 | 207 | 4.1 |
| 1936 | 1,133 | 5.0 | 246 | 4.7 |
| 1937 | 1,113 | 5.1 | 238 | 4.4 |
| 1938 | 1,161 | 5.4 | 237 | 4.6 |
| 1939 | 1,144 | 5.4 | 260 | 5.1 |
| 1940 | 1,145 | 5.4 | 253 | 5.0 |
| 1941 | 1,146 | 5.4 | 280 | 5.3 |
| 1942 | 1,164 | 5.3 | 279 | 5.4 |
| 1943 | 1,150 | 5.1 | 241 | 4.6 |
| 1944 | 1,176 | 5.0 | 239 | 4.7 |
| 1944 (2d. session) | 1,141 | 4.6 | 252 | 4.9 |
| 1945 | 1,352 | 5.6 | 302 | 5.1 |
| 1946 | 1,868 | 8.0 | 242 | 4.2 |
| 1947* | 2,183 | 9.1 | 342 | 5.4 |
| 1948 | 2,150 | 9.5 | 392 | 7.1 |
| 1949 | 2,100 | 8.9 | 612 | 12.1 |
| 1950 | 1,806 | 7.2 | 505 | 10.7 |
| 1951 | 1,564 | 5.9 | 468 | 7.6 |
| 1952 | 1,471 | 5.4 | 351 | 5.7 |
| 1953 | 1,465 | 5.3 | 363 | 5.5 |
| 1954 | 1,502 | 5.3 | 360 | 5.2 |
| 1955 | 1,537 | 5.4 | 345 | 4.9 |
| 1956 | 1,573 | 5.5 | 340 | 5.0 |

* Includes additional classes.

Table 19 indicates the number and proportion of women enrolled and graduated by year since 1905. Although there is little evidence of significant change in recent years, the increased enrollment for the past three years may suggest that the absolute decrease in women graduates will be of short duration. It appears already that the relative decrease has stopped.

## STUDENT FEES

Fees for resident and nonresident students charged by each medical school are listed in table 1. During the year covered by this report, the average tuition fee in American schools for resident students was $684 and for nonresident students was $857. Comparable figures for last year were $646 and $807.

## MILITARY LIABILITY OF MALE MEDICAL STUDENTS

This year medical schools were again requested to classify all male students as to whether they had any military liability under the Universal Military Service and Training Act, as amended. Male students with no military liability include those who (*a*) served on active military service duty in excess of 90 days between Dec. 7, 1941, and Sept. 2, 1945; (*b*) served on active military duty in the armed forces for more than one year between Sept. 16, 1940, and June 24, 1948; or (*c*) served on active military duty in the armed forces for two years or more after June 24, 1948, and ended service with an honorable discharge. All male students not falling within one of these three categories are, therefore, subject to military liability.

Table 20 shows the distribution by class of the number of male students with and without military liability. Those male students with military liability constitute 81% of the first-year class, 82% of the second-year, 82.5% of the third-year, and 80% of the fourth-year group. Roughly 81.5% of all male students enrolled in medical schools in 1955-1956 were subject to military liability. It is to be noted that the number cited as liable for service makes no allowance for physical disabilities and other factors that would render an unknown percentage ineligible for service.

TABLE 20.—*Military Liability of Male Medical Students, 1955-1956*

| | First Yr. | Second Yr. | Third Yr. | Fourth Yr. | Totals |
|---|---|---|---|---|---|
| Men with no Military Liability | 1,303 | 1,205 | 1,157 | 1,360 | 5,025 |
| Men with Military Liability | 5,820 | 5,535 | 5,412 | 5,274 | 22,041 |
| Total Enrollment | 7,183 | 6,740 | 6,569 | 6,574 | 27,066 |

## PREPROFESSIONAL PREPARATION OF FIRST-YEAR MEDICAL CLASS

Since January, 1953, the minimum requirement for admission to an approved medical school has been three years of college preparatory study. In advocating this minimum the Council on Medical Education and Hospitals recommends a full four-year college course as more desirable in order that a broader background education may be obtained. In the "Essentials of an Acceptable Medical School," the Council indicates provision for consideration of the unusually intelligent, gifted, and mature student who may have less than the three-year minimum college education, through stating that "rarely a school will be justified in admitting a superior student under exceptional conditions after two years of college work."

For some time there has been concern on the part of many medical educators over the ever increasing length of time involved in the educational process of preparing for the practice of medicine. Currently some medical schools are giving serious consideration to the revision of premedical requirements directed towards reduction of the time factor and content of educational experience prior to admission to the study of medicine. In recent years many schools have lengthened the academic year in medicine so as to permit more adequate opportunity for coverage of certain areas. Consideration and serious thought might well be given to the period involved in the education of

a physician today in view of the gradual lengthening of the required college premedical experience on the one hand and the lengthening programs leading to specialization on the other hand. How great a segment of an individual's life should be devoted to the process of preparing to engage in professional activity in medicine? Are there not challenges for sound educational experimentation in this area that might point to means of satisfactory attainment through better integration of some aspects of premedical and medical education as well as readjustments in the initial stages of graduate training (internship)?

TABLE 21.—*Premedical Training of Freshmen Students in the United States, 1955-1956*

| | No. of Freshmen | Three Yrs. College Training | Four Yrs. College Training | No. Holding Degrees | Percentage With Degrees |
|---|---|---|---|---|---|
| Medical College of Alabama | 81 | 10 | 71 | 69 | 85.2 |
| University of Arkansas | 93 | 34 | 59 | 53 | 57.0 |
| College of Medical Evangelists | 99 | 0 | 99 | 97 | 98.0 |
| University of Southern California | 69 | 25 | 44 | 39 | 57.0 |
| Stanford University | 58 | 33 | 25 | 25 | 43.1 |
| University of California, San Francisco | 77 | 44 | 33 | 31 | 40.3 |
| University of California, Los Angeles | 50 | 13 | 37 | 37 | 74.0 |
| University of Colorado | 86 | 33 | 53 | 39 | 45.2 |
| Yale University | 79 | 14 | 65 | 65 | 82.3 |
| Georgetown University | 115 | 3 | 112 | 111 | 96.5 |
| George Washington University | 102 | 13 | 89 | 68 | 66.7 |
| Howard University | 79 | 0 | 79 | 79 | 100.0 |
| University of Miami | 73 | 15 | 58 | 54 | 93.1 |
| Medical College of Georgia | 101 | 24 | 77 | 77 | 76.2 |
| Emory University | 73 | 26 | 47 | 43 | 58.9 |
| Chicago Medical School | 73 | 0 | 73 | 73 | 100.0 |
| Northwestern University | 133 | 46 | 87 | 83 | 62.4 |
| Stritch School of Medicine | 88 | 51 | 37 | 35 | 39.8 |
| University of Chicago | 72 | 15 | 57 | 45 | 62.5 |
| University of Illinois | 167 | 91 | 76 | 63 | 37.7 |
| Indiana University | 155 | 77 | 78 | 69 | 44.5 |
| State University of Iowa | 120 | 70 | 50 | 43 | 35.8 |
| University of Kansas | 101 | 9 | 92 | 87 | 86.1 |
| University of Louisville | 97 | 10 | 87 | 87 | 89.7 |
| Louisiana State University | 126 | 41 | 85 | 67 | 53.2 |
| Tulane University | 131 | 50 | 81 | 54 | 41.2 |
| Johns Hopkins University | 74 | 0 | 74 | 74 | 100.0 |
| University of Maryland | 96 | 32 | 64 | 61 | 63.5 |
| Boston University | 73 | 2 | 71 | 70 | 95.9 |
| Harvard Medical School | 118 | 1 | 117 | 117 | 99.2 |
| Tufts University | 111 | 6 | 105 | 105 | 94.6 |
| University of Michigan | 206 | 95 | 111 | 111 | 53.9 |
| Wayne State University | 76 | 41 | 35 | 35 | 46.1 |
| University of Minnesota | 128 | 74 | 54 | 50 | 39.1 |
| University of Mississippi | 80 | 50 | 30 | 20 | 25.0 |
| St. Louis University | 127 | 21 | 106 | 95 | 74.8 |
| University of Missouri | 45 | 16 | 29 | 26 | 57.8 |
| Washington University | 87 | 19 | 68 | 62 | 71.4 |
| Creighton University | 76 | 33 | 43 | 38 | 43.4 |
| University of Nebraska | 87 | 38 | 49 | 44 | 50.6 |
| Dartmouth Medical School | 25 | 23 | 2 | 2 | 8.0 |
| Albany Medical College | 64 | 0 | 64 | 64 | 100.0 |
| University of Buffalo | 85 | 8 | 77 | 77 | 90.6 |
| Columbia University | 119 | 0 | 119 | 119 | 100.0 |
| Cornell University | 84 | 3 | 81 | 81 | 96.4 |
| New York Medical College | 128 | 1 | 127 | 124 | 96.9 |
| New York University | 131 | 10 | 121 | 121 | 92.4 |
| State University of New York, New York | 151 | 7 | 144 | 135 | 89.4 |
| State University of New York, Syracuse | 80 | 14 | 66 | 66 | 92.5 |
| University of Rochester | 71 | 4 | 67 | 67 | 94.4 |
| University of North Carolina | 68 | 26 | 42 | 39 | 57.3 |
| Duke University | 77 | 26 | 51 | 46 | 59.7 |
| Bowman Gray School of Medicine | 54 | 6 | 48 | 48 | 88.9 |
| University of North Dakota | 40 | 16 | 24 | 24 | 60.0 |
| University of Cincinnati | 93 | 2 | 91 | 91 | 97.8 |
| Western Reserve University | 83 | 1 | 82 | 81 | 97.6 |
| Ohio State University | 151 | 14 | 137 | 134 | 88.7 |
| University of Oklahoma | 101 | 47 | 54 | 42 | 41.6 |
| University of Oregon | 77 | 28 | 49 | 38 | 49.4 |
| Hahnemann Medical College | 109 | 8 | 101 | 101 | 92.6 |
| Jefferson Medical College | 176 | 5 | 171 | 171 | 97.2 |
| Temple University | 128 | 2 | 126 | 126 | 98.4 |
| University of Pennsylvania | 125 | 2 | 123 | 121 | 96.8 |
| Woman's Medical College | 51 | 5 | 46 | 46 | 90.2 |
| University of Pittsburgh | 100 | 17 | 83 | 83 | 83.0 |
| Medical College of South Carolina | 79 | 21 | 58 | 55 | 69.6 |
| University of South Dakota | 42 | 17 | 25 | 25 | 40.5 |
| University of Tennessee | 217 | 117 | 100 | 66 | 30.4 |
| Meharry Medical College | 75 | 2 | 73 | 72 | 96.0 |
| Vanderbilt University | 51 | 25 | 26 | 26 | 51.0 |
| Southwestern Medical School | 102 | 31 | 71 | 59 | 30.4 |
| University of Texas | 166 | 35 | 131 | 115 | 83.7 |
| Baylor University | 87 | 27 | 60 | 57 | 65.5 |
| University of Utah | 54 | 17 | 37 | 30 | 55.6 |
| University of Vermont | 50 | 4 | 46 | 46 | 92.0 |
| University of Virginia | 77 | 5 | 72 | 72 | 93.5 |
| Medical College of Virginia | 84 | 14 | 70 | 70 | 83.3 |
| University of Washington | 77 | 24 | 53 | 15 | 19.5 |
| West Virginia University | 31 | 11 | 20 | 18 | 58.1 |
| University of Wisconsin | 87 | 61 | 26 | 26 | 29.9 |
| Marquette University | 102 | 48 | 54 | 42 | 41.2 |
| University of Puerto Rico | 52 | 24 | 28 | 33 | 63.5 |
| Totals | 7,686 | 1,933 | 5,753 | 5,375 | 69.9 |

In the entering class, 1955-1956, there were 7,686 students. Of this number 1,933 had a minimum of three years of college education (table 21). Of the total, 5,753 (75%) had four years of college education and of this group 5,375 (70% of the total) possessed baccalaureate degrees.

## COLLEGE RECORD OF FIRST-YEAR MEDICAL CLASS

Table 22 represents a comparative analysis of the premedical scholastic record of the entering class in medicine each year since 1950-1951. The table undoubtedly reflects the fact that in 1950-1951, when there was a relatively higher proportion of students admitted with "A" college grade averages, the total number of applicants was well over 22,000 as compared to less than 15,000 during the past two or three years. Over the six-year period the proportion of students admitted to medical schools with "A" college grade averages has fallen from 40 to 15.8%, while those admitted with "B" averages have increased from 43 to 70.6%. It is of interest that there has been relatively little change in the number of students admitted with a "C" college grade average, although this group has declined from 17% in 1950-1951 to 13.6% in 1955-1956.

TABLE 22.—*Comparative Analysis of College Records of First Year Medical Students, 1950-1956*

| College Grade Average First Year Medical Students | 1950-1951 | 1951-1952 | 1952-1953 | 1953-1954 | 1954-1955 | 1955-1956 |
|---|---|---|---|---|---|---|
| 3.6-4.0 (A) | 40 | 30 | 18.0 | 21.1 | 16.8 | 15.8 |
| 2.6-3.5 (B) | 43 | 55 | 67.5 | 68.9 | 69.0 | 70.6 |
| 1.0-2.5 (C) | 17 | 15 | 14.5 | 10.0 | 14.2 | 13.6 |

In view of the type of inquiries received by the Council, it is obvious that there is still much misunderstanding on the part of premedical college advisors, premedical students, and the public in regard to the limitation of students admitted to medical schools to the group having "A" college grade averages. This reemphasizes the need for interpretation of the fact that college academic achievement as measured by scholastic records is only one factor among many utilized in the selection of medical students.

## ATTRITION OF MEDICAL STUDENTS

For each of the past two years, it has been possible to obtain data from the medical schools on student attrition. By publishing similar information in each succeeding year, losses in any given class can be shown throughout the four years that class is in medical school. Table 23 depicts by class and cause students lost to medicine during 1955-1956. Comparison of these figures with the previous year reveals considerable constancy in the percentage of total losses in each class and the total losses in relation to the total enrollment for the past two years. There is, however, a difference this year compared with 1954-1955 in the causes of loss in the third-and-fourth-year classes.

Two-thirds of all losses in both 1954-1955 and 1955-1956 were in the first-year class. The current data for 1955-1956 show that 67.5% of those losses were due to failure or withdrawal in poor academic standing. The second-year class had 62% of their losses from this cause. Although in the third-and-fourth-year classes of 1954-1955 more than two-thirds of the attrition were students who withdrew in good academic standing, this cause accounts for less than half (44.9%) of the losses in these two classes in 1955-1956. Though this change in ratio appears significantly large, the absolute number of students concerned is relatively low. Thus a change in the reason one student withdrew in each of 15 schools would erase this difference without necessarily indicating any significant trend. Only observation over a period of several years can determine the significance, if any, of the change in cause of attrition of third-and-fourth-year students in 1955-1956. It is to be hoped that withdrawals of students in good academic standing because of financial need or lack of counseling can be minimized by the increasing interest in these factors on the part of the medical schools.

TABLE 23.—*Attrition in the Approved Medical Schools in the United States, 1955-1956*

| | Enrollment | Failed | Withdrew Poor Standing | Withdrew Good Standing | Totals | Percentage of Enrollment Lost |
|---|---|---|---|---|---|---|
| First Year | 7,686 | 231 | 93 | 156 | 480 | 6.1 |
| Second Year | 7,174 | 81 | 15 | 58 | 154 | 2.1 |
| Third Year | 6,898 | 38 | 10 | 30 | 78 | 1.1 |
| Fourth Year | 6,886 | 4 | 2 | 14 | 20 | 0.3 |
| Totals | 28,639 | 354 | 120 | 258 | 732 | |

Table 24 shows, by type of school ownership, data referable to enrollments, applications, and attrition due to unsatisfactory scholarship by the first-year class. Last year it was noted that interpretations of causal relationships from a similar table should be made with caution. The data for 1955-1956 justify this reservation. The failure rate of the first-year class is not greatly dissimilar this year for public and private schools as it was in 1954-1955, even though there is an even greater discrepancy in the number of applications. Note that the figures in table 24 refer to applications, not applicants. It can be seen that the total first-year enrollment was shared equally by public and private schools.

TABLE 24.—*First Year Enrollments, Applications, and Attrition with Poor Scholarship by Type of School Ownership, 1955-1956*

| | Publicly Owned | Privately Owned |
|---|---|---|
| No. of schools | 39 | 43 |
| Percentage of enrollment | 49 | 51 |
| Percentage of enrollment from out of state | 5 | 31 |
| *Percentage of applications | 19 | 81 |
| Percentage of failures and withdrawals in poor academic standing | 56 | 44 |

* Puerto Rico figures not available

## GRADUATES

The graduates of approved medical schools in the United States in 1956 were fewer than in the past two years. This was anticipated in the annual report last year. Several factors provide adequate explanation as well as portend that the present drop is an incident in a continuing trend to increasing numbers of graduates. For the first time in several years, there were no double graduation classes by medical schools. Stanford in 1954-1955 was the last school to discontinue its intern year required for graduation, producing two graduating classes. In the years until 1955-1956, as schools discontinued their required intern year, double graduating classes occurred. The difference between the 1954-1955 third-year class that became the 1955-1956 fourth-year and graduating class is accounted for by students who withdrew or failed.

In 1956, six medical schools (Harvard, Texas Medical Branch, Tennessee, Michigan, Illinois, and Jefferson) each graduated more than 150 students. Eight schools (University of California, Los Angeles; Woman's Medical; Albany; Bowman Gray; Puerto Rico; Vermont; Miami; and Utah) each had fewer than 50 students in their graduating classes. Information in regard to the number of graduates each year since 1930 can be found in table 15. The variation this year is similar to that of 1951-1952. Except for such incidents, there has been a continuing increase.

The 53 students in the 1955-1956 third-year classes in the medical schools of the University of Mississippi and the University of Missouri, which are developing four-year programs, will not entirely compensate for the smaller total third-year class from which the graduates will come next year. It is likely, therefore, that next year's graduating class will again be a contrary incident in the over-all trend. The development of the new or extending schools, together with the larger total first and second year classes, portends that new record numbers of graduates will occur in two or three years.

TABLE 25.—*Students in the Required Intern Year in the United States, 1931-1956*

| Year | Number of Students |
|---|---|
| 1930-1931 | 1,025 |
| 1935-1936 | 1,213 |
| 1940-1941 | 1,058 |
| 1945-1946 | 488 |
| 1950-1951 | 379 |
| 1955-1956 | 0 |

## REQUIRED INTERN YEAR

Two years ago the trend toward abandoning the internship as a requirement for graduation was highlighted. With the discontinuance of this requirement by Stanford University last year, there are now no students serving internships as a prerequisite to graduation. Table 25 summarizes at five-year intervals since 1930 the number of students who were required to serve internships as a prerequisite to graduation. All medical school graduates today serve internships prior to entering practice or proceeding with graduate education through residency or fellowship training. Thus, there is no indiciation that the elimination of this requirement of the medical schools for graduation has produced any trend away from the internship as a step in the medical education process. This has, however, removed any jurisdiction of the medical school over selection or approval of the internship that is taken by graduates.

## THE NEXT ENTERING CLASS

Data this year from medical schools, including schools developing new programs, indicate the first-year class in 1956-1957 will be larger than was the 1955-1956 entering class. Two new medical schools, the University of Florida at Gainesville and Seton Hall University, will begin to enroll first-year medical students. The newly developing Albert Einstein College of Medicine plans to increase the size of the next entering class. Development of a four-year program by the University of Missouri makes possible an increase in its entering class. The number of applicants [9] for the study of medicine rose 14% this past year (table 26). If the number of applicants continues to be higher next year, the trend during the past six years will have been reversed, permitting medical schools to fill all available openings with qualified applicants. This would indicate a maintenance of and possible increase in the numbers of entering students in subsequent years.

## FOREIGN MEDICAL SCHOOLS AND STUDENTS

### EVALUATION OF FOREIGN-TRAINED PHYSICIANS

Since 1950, the Council on Medical Education and Hospitals in collaboration with the Association of American Medical Colleges has maintained a listing [10] of some 50 foreign medical schools whose graduates the two groups have recommended to be considered on a comparable basis with graduates of our own approved schools. This listing was designed primarily to be of assistance to licensing boards in their dealings with foreign-trained physicians seeking licensure. The listing was always qualified to the effect that it was tentative and not complete so that foreign schools not so listed were neither approved nor disapproved and that graduates of unlisted schools should be evaluated on an individual basis by the licensing agencies, hospitals, and other organizations concerned.

Foreign medical schools were included in the listing solely upon information furnished by recognized American medical educators who were able to visit the schools during their travels abroad. This method of evaluation necessarily excluded from this recommendation those individuals who were graduates of schools offering sound education in medicine at the time of graduation but whose programs had deteriorated during or after the last world war. The method also could automatically bring the benefit of the recommendation to older physicians who graduated from a foreign medical school at a time when the educational program was weak, provided that the program had been sufficiently strengthened by the time of the visit of the American medical educator.

Up to the current moment, almost one-quarter of licensing boards continue to not accept for examination any foreign-trained physicians. More than one-quarter of the licensing boards will accept for examination only those foreign-trained physicians who are graduates of the medical schools incorporated in this listing. Thus for more than half of all state medical examinating boards, the listing has either been of no use or has lent itself to an unintended use. During the first five years of the existence of the listing, a relatively greater percentage (68%) of graduates of

TABLE 26.—*Number of Completed Applications Acted upon by Each Medical School and the Total Number of Applications Filed by These Applicants, 1955-1956**

| | Size of Freshman Class | Applicants to each Medical School | | | Total Applications Filed by Applicants to Each School | Average Number of Applications per Applicant |
|---|---|---|---|---|---|---|
| | | Men | Women | Total | | |
| Alabama | 79 | 162 | 12 | 174 | 499 | 2.9 |
| Albany | 60 | 966 | 56 | 1,022 | 10,690 | 10.5 |
| Arkansas | 92 | 162 | 12 | 174 | 258 | 1.5 |
| Baylor | 84 | 671 | 36 | 707 | 4,949 | 7.0 |
| Boston | 72 | 1,010 | 65 | 1,075 | 10,503 | 9.9 |
| Bowman Gray | 53 | 593 | 19 | 612 | 5,382 | 8.8 |
| Buffalo | 80 | 783 | 34 | 817 | 8,141 | 10.0 |
| California, L.A. | 49 | 419 | 41 | 460 | 3,117 | 6.8 |
| California, S.F. | 78 | 451 | 52 | 503 | 3,226 | 6.4 |
| Chicago Medical | 72 | 943 | 30 | 973 | 10,084 | 10.4 |
| Chicago, Univ. of | 73 | 817 | 53 | 870 | 7,926 | 9.1 |
| Cincinnati | 92 | 786 | 43 | 829 | 6,490 | 7.8 |
| Colorado | 85 | 163 | 16 | 179 | 351 | 2.0 |
| Columbia P & S | 120 | 1,360 | 139 | 1,499 | 12,678 | 8.5 |
| Cornell | 84 | 1,299 | 122 | 1,421 | 12,208 | 8.6 |
| Creighton | 76 | 639 | 19 | 658 | 4,945 | 7.5 |
| Dartmouth | 24 | 222 | 1 | 223 | 2,221 | 10.0 |
| Duke | 78 | 675 | 25 | 700 | 5,812 | 8.3 |
| Einstein | 56 | 815 | 41 | 856 | 8,480 | 9.9 |
| Emory | 71 | 542 | 28 | 570 | 3,758 | 6.6 |
| Georgetown | 113 | 873 | 48 | 921 | 8,222 | 8.9 |
| George Washington | 102 | 1,195 | 51 | 1,246 | 11,097 | 9.4 |
| Georgia | 98 | 209 | 13 | 222 | 500 | 2.3 |
| Hahnemann | 109 | 968 | 39 | 1,007 | 8,710 | 8.6 |
| Harvard | 115 | 1,195 | 89 | 1,284 | 9,004 | 7.5 |
| Howard | 76 | 372 | 36 | 408 | 1,772 | 4.3 |
| Illinois | 166 | 549 | 46 | 595 | 2,493 | 4.2 |
| Indiana | 152 | 416 | 21 | 437 | 1,802 | 4.1 |
| Iowa | 117 | 241 | 14 | 255 | 909 | 3.6 |
| Jefferson | 174 | 1,786 | .. | 1,786 | 13,006 | 7.3 |
| Johns Hopkins | 72 | 715 | 55 | 770 | 6,953 | 9.0 |
| Kansas | 100 | 328 | 25 | 353 | 1,960 | 5.6 |
| Louisiana | 119 | 282 | 16 | 298 | 1,155 | 3.9 |
| Louisville | 94 | 260 | 10 | 270 | 961 | 3.6 |
| Loyola (Stritch) | 88 | 744 | 47 | 791 | 5,555 | 7.0 |
| Marquette | 102 | 882 | 41 | 923 | 6,317 | 6.8 |
| Maryland | 96 | 317 | 9 | 326 | 2,255 | 6.9 |
| Medical Evangelists | 96 | 151 | 9 | 160 | 271 | 1.7 |
| Meharry | 67 | 465 | 42 | 507 | 1,724 | 3.4 |
| Miami | 72 | 169 | 10 | 179 | 565 | 3.2 |
| Michigan | 201 | 571 | 29 | 600 | 2,684 | 4.5 |
| Minnesota | 128 | 288 | 17 | 305 | 1,168 | 3.8 |
| Mississippi | 77 | 190 | 6 | 196 | 307 | 1.6 |
| Missouri | 43 | 143 | 5 | 148 | 596 | 4.0 |
| Nebraska | 84 | 179 | 9 | 188 | 655 | 3.5 |
| New York Medical | 129 | 1,760 | 133 | 1,893 | 16,759 | 8.9 |
| New York University | 129 | 1,243 | 114 | 1,357 | 13,324 | 9.8 |
| North Carolina | 67 | 248 | 14 | 262 | 1,446 | 5.5 |
| North Dakota | 37 | 129 | 5 | 134 | 768 | 5.7 |
| Northwestern | 130 | 1,468 | 78 | 1,546 | 11,920 | 7.7 |
| Ohio State | 150 | 465 | 23 | 488 | 1,961 | 4.0 |
| Oklahoma | 100 | 193 | 8 | 201 | 683 | 3.4 |
| Oregon | 77 | 283 | 19 | 302 | 1,599 | 5.3 |
| Pennsylvania | 125 | 1,384 | 85 | 1,469 | 12,518 | 8.5 |
| Pittsburgh | 100 | 662 | 40 | 702 | 4,900 | 7.0 |
| Puerto Rico | 52 | 110 | 25 | 135 | 404 | 3.0 |
| Rochester | 71 | 982 | 55 | 1,037 | 10,163 | 9.8 |
| St. Louis | 122 | 926 | 25 | 951 | 7,562 | 8.0 |
| South Carolina | 80 | 159 | 5 | 164 | 272 | 1.7 |
| South Dakota | 42 | 171 | 3 | 174 | 1,193 | 6.9 |
| Southern California | 69 | 546 | 49 | 595 | 4,257 | 7.2 |
| Southwestern | 102 | 400 | 38 | 438 | 1,175 | 2.7 |
| Stanford | 58 | 431 | 52 | 483 | 3,531 | 7.3 |
| State U. of N.Y. (N.Y.) | 148 | 1,345 | 99 | 1,444 | 13,458 | 9.3 |
| State U. of N.Y. (Syracuse) | 76 | 917 | 51 | 968 | 9,709 | 10.0 |
| Temple | 132 | 1,441 | 69 | 1,510 | 12,075 | 8.0 |
| Tennessee | 201 | 369 | 24 | 393 | 948 | 2.4 |
| Texas | 154 | 475 | 33 | 508 | 1,308 | 2.6 |
| Tufts | 111 | 580 | 48 | 628 | 4,880 | 7.8 |
| Tulane | 129 | 877 | 44 | 921 | 6,613 | 7.2 |
| Utah | 54 | 207 | 5 | 212 | 1,256 | 5.9 |
| Vanderbilt | 51 | 619 | 24 | 643 | 6,062 | 9.4 |
| Vermont | 50 | 392 | 25 | 417 | 3,753 | 9.0 |
| Virginia Univ of | 76 | 548 | 26 | 574 | 4,520 | 7.9 |
| Virginia, Med. Coll. of | 84 | 362 | 21 | 383 | 2,492 | 6.5 |
| Washington, Univ. of | 75 | 358 | 18 | 376 | 2,099 | 5.6 |
| Washington (St. Louis) | 84 | 1,261 | 63 | 1,324 | 10,938 | 8.3 |
| Wayne State | 74 | 307 | 17 | 324 | 1,058 | 3.3 |
| Western Reserve | 82 | 1,112 | 72 | 1,184 | 9,331 | 7.9 |
| West Virginia | 31 | 108 | 8 | 116 | 406 | 3.5 |
| Wisconsin | 82 | 163 | 14 | 177 | 557 | 3.1 |
| Woman's Medical | 51 | ... | 212 | 212 | 1,158 | 5.4 |
| Yale | 78 | 955 | 64 | 1,019 | 9,193 | 9.0 |
| Totals | 7,602 | 50,922 | 3,239 | 54,161 | | 3.6 |

* Data from Gee.[9]

listed schools passed licensure examination than did graduates of unlisted schools (46%). However, because of the greater number of graduates of unlisted schools that were examined, 75% of the total number of foreign graduates who passed licensure examinations during this period were from unlisted schools.

At the time the listing of foreign medical schools was first formulated, the major problem it was designed to alleviate was related to providing educational evaluation for foreign-trained physicians coming to the United States as permanent immigrants. Although this problem still exists and is augmented by the beginning return of American citizens who have studied medicine abroad, the ever-increasing educational exchange programs have shifted the major emphasis. Currently, the vast majority of foreign-trained physicians entering the United States do so under an exchange program seeking further training as interns or residents under temporary visas. Most of the physicians in this category are from unlisted schools.

Hospitals in the United States have not had available any adequate mechanism for evaluating the medical qualification of such physicians they have accepted as house officers. This has led to many unfortunate experiences and disappointments to both the hospitals and the physicians.

These are but some of the many reasons that led to the conviction that the listing of certain foreign medical schools with the recommendation that their graduates be considered on a basis comparable to graduates of our own schools was neither an adequate nor an equitable solution to their problem. This conviction of the need for a new approach resulted in the formation approximately two years ago of the Cooperating Committee on Graduates of Foreign Medical Schools with participating representatives of the Council on Medical Education and Hospitals, the Federation of State Medical Boards, the American Hospital Association, and the Association of American Medical Colleges.

The following principles gave guidance and direction to the Cooperating Committee in its considerations. It is believed that these principles should similarly give guidance in the administration of the program.

1. Although the responsibility to share educational opportunities in medicine is recognized, the primary concern must be for the health care of the American public. Thus, before assuming responsibility for the care of patients as interns or residents, all graduates of foreign medical schools (immigrants, exchange students, and American graduates of foreign medical schools) should give evidence, as nearly as can be measured, of having reached a level of educational attainment comparable to that of students in American schools at the time of graduation.

2. The primary objective of this committee is to devise an effective mechanism for measuring educational attainment in the absence of intimate and continuing knowledge of the educational background of foreign-trained physicians. This mechanism should provide hospitals with pertinent information regarding the medical qualifications of foreign-trained physicians seeking position as interns or residents. It should not interfere with the hospital's privilege of making its own selection among qualified physicians. It should not serve as a substitute for or interfere with the normal licensure procedures of the various state boards, although the program may be helpful to the boards.

3. It is not intended that this mechanism be applicable to those foreign medical school graduates in the United States as temporary students participating in programs of medical and related studies in recognized universities, medical schools, and postgraduate schools, who by the very nature of their study are not involved in the responsibility of patient care.

It is the belief of the Cooperating Committee that implementation of its proposed program will afford hospitals needed assurance in regard to the medical qualifications of foreign-trained physicians seeking positions as interns and residents. This program represents an extension to foreign graduates of the same principle that has proved its value and long been in effect for American graduates.

## Proposed Program

The emphasis in this program is placed on evaluating the medical qualifications of the individual foreign-trained physician who wishes to come to the United States, rather than attempting to evaluate on a continuing basis the educational programs of the hundreds of foreign medical schools that serve as potential sources of these foreign-trained physicians.

The program is designed to establish two principal criteria in regard to each such foreign-trained physician: (1) that he is a graduate of a bona fide medical school and (2) that, as nearly as can be measured, he has reached a level of educational attainment comparable to that of students in American schools at the time of graduation. These criteria are to be established by evaluation of the foreign-trained physician's medical credentials in view of predetermined minimal standards and by examination of the foreign-trained physician for factual knowledge of medicine.

## Evaluation of Medical Credentials

The basic requirements listed below must be met in order for the foreign-trained physician's credentials to be considered satisfactory. As evidence of fulfillment of these requirements, the candidate should present medical credentials in original form with an acceptable English translation. These credentials together with the bona fide status of the medical school should be verified by the American consul in the country in which the school of graduation is located.

## Basic Requirements

1. A minimum of 18 years of total formal education.

2. Included in this minimum of 18 years of total formal education should be a minimum of 32 months of attendance and direct study of medicine, excluding any time devoted to what in the United States would be considered as premedical study or internship.

3. In any country where the minimum standards stated above do not constitute sufficient educational achievement to acquire licensure in that country, the latter rather than the minimum previously described would be required. Although it would be expected that licensure would be achieved in the country in

which is located the school of graduation, under exceptional circumstances such licensure would not be demanded if the candidate had fulfilled all of the educational requirements for licensure.

4. Evidence of satisfactory completion of the above described courses of study.

5. As evidence of acceptable moral and ethical behavior, each candidate must present a properly executed affidavit that he has not been convicted of any crime involving moral turpitude and that he has never been censored or had other punitive action taken against him by any recognized medical body including licensing agencies for reasons of immoral conduct.

### Examination for Factual Knowledge in Medicine

The objectives that this program is designed to fulfill dictated certain factors that had to be considered in determining the nature of the examination.

1. An acceptable examination must be a valid test of the foreign physician's factual knowledge in medicine. The examination must also give sufficient insight into the applicant's ability to approach rationally a clinical problem and follow it through to a logical conclusion as the result of application of basic medical concepts rather than empiric knowledge.

2. Since applicants to this evaluation service are to be measured in comparison to the performance of graduates of American medical schools, the examination must lend itself to such a comparison.

3. If this program is widely accepted, as the committee is confident it will be, foreign-trained physicians seeking further training in the United States will not be able to find positions offering such experience until they have successfully completed all phases of the program. Those physicians seeking further training in the United States cannot obtain a student visa until they have already received a position offering this additional training. It therefore is necessary that the examination be conducted abroad as well as in the United States. Under these circumstances it is then also most advisable that the administration of the examination require minimal supervision.

4. The costs of preparation and administration of the examination must not be prohibitive.

On the basis of advice from consultants experienced in educational testing, the Cooperating Committee concluded that an objective-type examination of approximately 400 properly selected test items would provide for purposes of this program a valid measure of medical knowledge. A significant number of these items should consist of case presentations with mulitple questions based on them to determine the applicant's ability to interpret symptoms, signs, and basic laboratory data in arriving at accurate diagnosis and rational therapy. Such an examination could be given in a single day, divided into a morning and afternoon session.

Utilization of the objective multiple-choice examination presents many advantages. Perhaps most important among these for the purposes of this program is that such an examination lends itself to rapid, accurate, impartial machine scoring and thorough statistical analysis, thus providing a sound basis for many comparative studies. Another important advantage of this type of testing is that the administration of it is not complex and only minimal supervision is necessary so that it could be given abroad.

One of the important problems that has been encountered with graduates of foreign medical schools who have taken further training in hospitals in the United States has been their lack of satisfactory command of English. Inability to communicate well with colleagues, staff physicians, and patients can readily lead to disastrous accidents in patient care. Furthermore, it is highly unlikely that any effective learning can occur without easy intercommunication between student and teacher. Facility with English is to be one of the requirements for participation in this program and will be one of the factors measured.

Successful completion of all phases of this evaluation program would result in certification of this achievement to hospitals and other interested organizations with the approval of the foreign-trained physician concerned.

### Current Status of Evaluation Service

The four parent organizations of the Cooperating Committee have all endorsed this program. An organization to be entitled "Evaluation Service for Foreign Medical Graduates" is now in the process of formation to complete the necessary administrative planning. It is hoped that this service will be available to evaluate foreign-trained physicians by the summer of 1957. Each of the parent groups have named two representatives who will compose the board of trustees of this new organization and who will be responsible for the management of its property, business, and affairs. At the time this new program becomes an effective working mechanism, it is anticipated that the current listing [10] of certain foreign medical schools will be abandoned.

TABLE 27.—*Foreign Citizens Enrolled in United States Medical Schools*

| | 1954-1955 | 1955-1956 |
|---|---|---|
| 1st year class | 104 | 130 |
| 2nd year class | 110 | 100 |
| 3rd year class | 89 | 125 |
| 4th year class | 76 | 84 |
| Totals | 379 | 452 |

## FOREIGN STUDENTS STUDYING MEDICINE IN THE UNITED STATES

In 1955-1956 there were 452 foreign citizens (excluding Canadians) enrolled as undergraduate students in medical schools in the United States. These students were enrolled in 61 of our 82 approved schools. Study of table 27, which compares enrollment of foreign citizens of last year with the current year, indicates that the two major factors accounting for the present increased enrollment are more admissions to the entering class and also acceptance of foreign students into the third-year class on the basis of prior study outside of the United States.

In terms of numbers of students involved, our greatest contribution to the medical education of foreign physicians is at the graduate level. More than 6,000 foreign-trained physicians in the United States on a temporary basis for further study served during the last year as interns or residents.[11] In addition, there were approximately 1,000 foreign citizens [12] in the United States on immigration visas serving as house officers.

### AMERICAN STUDENTS STUDYING MEDICINE IN OTHER COUNTRIES (EXCLUDING CANADA)

In October, 1955, the Institute of International Education published a preliminary report of the results of a 1954-1955 survey of United States citizens studying abroad. According to this report, in the year surveyed there were 1,386 United States citizens enrolled in medical schools outside the United States and Canada. Almost all of these (1,344) were studying medicine in Europe, with the large majority in schools in Switzerland (490), Italy (342), The Netherlands (125), and Belgium (103).

Presented for the first time in last year's report were data indicating that during the five-year period, 1950-1954, 99 initial licenses were granted by 18 states, the District of Columbia, and the Canal Zone to physicians born in the United States who were graduates of medical schools outside the United States and Canada. It was noted that this information was not available from New York and Pennsylvania.

The notation that this was just the beginning impact of United States citizens returning after acquiring their medical degrees abroad is substantiated by data for 1954-1955. During this one-year period, initial licenses were granted by 18 states and Puerto Rico to 89 individuals born in the United States who acquired their medical education abroad. Again, information was not available from New York and Pennsylvania, but both states have agreed to furnish this data in the future. The experience of this one year is almost equivalent to that of the preceding five years. The study of the Institute of International Education referred to above seems to justify the belief that there will continue to be increasing numbers of United States citizens returning for medical practice after a medical education acquired abroad.

## THE INTERNSHIP

The 1956 Internship and Residency Number of THE JOURNAL will be published Sept. 22, 1956, and will present statistical data and other information regarding training programs for interns and residents conducted in hospitals approved by the Council. This report will include descriptive material; statistical tables and graphs; information on the National Intern Matching Program, the Internship Review Committee, the revised Essentials of an Approved Internship, the Residency Review Committees, and the Sears Roebuck Foundation; a brief report on foreign medical school graduates serving internships and residencies in approved hospitals; and the plan for future evaluation of the qualifications of foreign physicians who wish to come to the United States for further medical training. Medical students, physicians, administrators, and others needing information of this nature are referred to the Internship and Residency Number of THE JOURNAL for 1956.

The revised Essentials of an Approved Internship as adopted by the House of Delegates at the Clinical Session in November, 1955, have been published, incorporating the changes as suggested by the *ad hoc* committee on internships. The principal modification was the adoption of the "one-fourth rule," which stated: "A hospital which for two successive years does not obtain one-fourth of its stated complement of interns may be disapproved for intern training." Early in January, 1956, a copy of the revised Essentials was sent to the administrator and to the chairman of the intern committee of each hospital approved for the training of interns. Attention was called to the "one-fourth rule" in the covering letter. In May, 1956, the following interpretation was given by the Council staff to this rule:

1. All interns serving may be considered in the computation of the percentage of quota filled; this includes both graduates of American medical schools and graduates of foreign medical schools.

2. The percentage of the intern quota filled will be calculated on the basis of (1) the quota published in the 1955 Internship and Residency Number of THE JOURNAL and (2) the number of interns on duty on Sept. 1, 1956, as reported by the hospital. Similar statistics will furnish the basis for computing the percentage of quota filled in following years.

3. If an approved hospital fails to meet the requirements of the "one-fourth rule," a letter of warning will be sent to the hospital the first year; if it does not fill the required percentage for two successive years, approval may be withdrawn.

4. Intern quotas may be changed on written request to the Council.

5. Application of the "one-fourth rule" will obtain beginning in January, 1958. Any approved hospital that does not fill one-fourth of its intern quota for the two successive years 1956-1957 and 1957-1958 may have its internship approval withdrawn at that time.

In the revised Essentials, it is specifically pointed out that, if the education of the intern is not the primary function of the internship, the hospital is in danger of having its approval removed.

The question of the future of the internship continues to present an interesting and controversial problem to the professional and administrative staffs of hospitals. Should it be discontinued? Should it be discontinued in hospitals affiliated with medical schools? Should all internships be rotating in type?

At the Annual Session in June, 1956, two resolutions were introduced into the House of Delegates to the effect that all straight internships should be abolished in favor of rotating internships. Straight internships are presently approved in medicine, surgery, pediatrics, and pathology. The majority of the programs offering straight services for interns occur in hospitals affiliated with medical schools. On Sept. 1, 1955, 10% of all approved internship positions offered were of the straight service type. Included in this number were 625 straight internships in medicine, 396 in surgery, 157 in pediatrics, and 50 in pathology.

The resolutions concerned were referred to the Reference Committee on Medical Education and Hospitals. The following statements are quoted from the report of this committee:

> The Reference Committee believes that there is a growing body of opinion within the profession in favor of a rotating internship. It also recognizes the difficulties involved and the dangers to some established educational programs were action taken precipitously to disapprove straight internships, which are about 10% of the total number now approved. It recommends the following substitute resolution for resolutions 11 and 38:

RESOLVED:
1. That the Council on Medical Education and Hospitals be requested to increase its efforts to encourage rotating internships rather than straight internships in all hospitals approved for the latter.
2. That a report of the results of this effort be submited annually.

This portion of the report of the Reference Committee was adopted by the House of Delegates. As stated in the revised Essentials of an Approved Internship [13]: "It is the opinion of the Council that the best general basic education is provided by a well organized and properly conducted rotating internship."

The problem of the straight internship is not one that can be solved easily. It requires careful study and analysis over a period of time by medical educators, the professional staffs of hospitals, and hospital administrators.

## THE SEARS ROEBUCK FOUNDATION

Physicians completing their graduate training who may require financial assistance in initiating the establishment of medical practice units in areas considered medically deficient will be interested in investigating the program financed by the Sears Roebuck Foundation. This foundation has made two grants of $125,000 to a revolving assistance fund administered by a Medical Advisory Board appointed by the Trustees of the American Medical Association. These grants are dispersed by the board in the form of 10-year, nonsecured, supplemental loans ranging from $1,000 to $25,000. Loans range from 0 to 6% interest, depending on the rapidity of payment. All loans are designed to make up the difference between what can be raised through normal lending agencies and the total amount needed. All funds collected in the form of interest and principal go into the revolving fund, thereby making the program self-perpetuating and providing the "seed" principle of growth and expansion at the same time. It is estimated that, within 10 years, this fund will amount to over 2 million dollars because of this growth factor, which will do much to meet the needs of medical distribution.

The purpose of the plan is to encourage physicians to locate in communities where their services are most urgently needed. Because of the limited funds available at this time, all loans are competitive, thereby insuring that loans reach communities and physicians with the greatest need. Preference is given to physicians, specialists, or general practitioners who desire to go to rural or rapidly growing suburban areas where medical care is inadequate.

All applications are reviewed by the territorial or area Medical Advisory Board members, where they are approved or rejected. If approved, they are then presented to the entire board, where all applications approved by the various area advisory boards are reviewed and final decisions made. The board reviews applications on the following grounds: (1) professional qualifications; (2) availability and quality of medical service in the community (loans are intended primarily to create units, but consideration is also given to improving and expanding existing units); (3) soundness of the plan for providing medical care; (4) financial initiative of applicant, thus insuring that loans are supplemental; and (5) the stipulation that no loan be granted for the purpose of refinancing existing debt or to be used for cost of living while establishing practice.

This statement regarding the Sears Roebuck Foundation is presented in this issue of THE JOURNAL for the information of medical school and hospital administrators, officials of local and state medical societies, and others whose advice is sought by young physicians in regard to sources of financial assistance. Physicians interested in applying for the Sears Roebuck assistance should contact their school, hospital, or county or state medical society for applications and more detailed information.

## PARTICIPATION OF MEDICAL SCHOOLS IN POSTGRADUATE MEDICAL EDUCATION

The need for continuing education throughout the professional career to keep abreast of advances in medical knowledge is being increasingly recognized by physicians as essential to their ability to render the best care to patients and to advance the health of the community. During the past few years, for instance, more has been added to the factual knowledge of the prevention, basic mechanism, diagnosis, and treatment of disease than was discovered in the previous several centuries combined. Medical school curriculums can incorporate these changes and advances in knowledge for undergraduate students of medicine. Vital new discoveries, however, are of little immediate use against human diseases until physicians already in practice learn about them. The communication to physicians of significant aspects of this accelerating pace of medical discovery provides one of the great challenges to modern medical education. What was adequate knowledge for medical practice yesterday is not fully adequate today. How best to meet this educational challenge is the broad problem of postgraduate medical education.

The American Medical Association and its Council on Medical Education and Hospitals have become increasingly concerned with the educational activities and needs in this third or postgraduate phase of medical education, in order that it can be most helpful to the medical profession. Initially, their entire attention was devoted to formal courses, though it is now apparent that such courses are only a part of the educationally significant programs in this field.

Beginning in 1937, Dr. Hamilton Anderson, a member of the staff of the Council on Medical Education and Hospitals, made a three-year study of continuation courses for practicing physicians by making a personal visitation to all the states. Lists of such courses were published in THE JOURNAL between 1938 and 1940. Since 1940, such lists have appeared each year, though personal visits to or evaluation of such courses have not been repeated. The most recent annual list of courses for physicians to be offered in the year beginning Sept. 1, 1956, appeared in the July 28 issue of THE JOURNAL.[14]

When it became apparent that postgraduate medical education embraces more than such courses, the Council in 1952 initiated a study of the whole field. The results of this study were reported by Dr. Douglas Vollan in THE JOURNAL last year.[15] This report indicated that the basic problems facing postgraduate medical education now are analogous to those that

faced medical schools 50 years ago and that faced graduate medical education in the second and third decades of this century. These include (1) a lack of a clear definition of objectives; (2) a wide range in the educational value of the programs offered; (3) insufficient opportunities for physicians to participate in educationally meritorious programs; (4) problems in financing; and (5) a lack of national guidance and little sharing of experience for those desiring to establish or improve postgraduate programs.

The Council reappraised the problems and the opportunities to be of assistance in this third phase of medical education. In February, 1956, an *ad hoc* advisory committee on postgraduate medical education was appointed in order to secure as broad-based advice as possible. This committee is composed of leaders in the profession representing backgrounds in private practice, in medical education, in schools and in hospitals and in medical societies, as well as a nucleus of others interested in this field. It is expected that the advisory committee will report its recommendations to the Council on Medical Education and Hospitals within the next year.

Programs for the continuation education of physicians in practice involve medical schools, hospitals, and medical societies working independently as well as cooperatively. Though the educational implications of a physician reading the medical literature, consulting with his colleagues, and attending the usual medical society meetings are significant, these are methods of education chiefly under the direct control of the individual physician. Postgraduate programs by hospitals, medical schools, and medical societies, on the other hand, involve groups of people and educational techniques having close analogies with undergraduate and graduate medical education programs. All three phases of medical education may involve the same educators in some instances. It is with such programs that the Council on Medical Education and Hospitals hopes to be helpful to the practicing profession.

For the first time this year, the annual questionnaire to medical schools contained an expanded series of questions concerning each school's role in the continuing education of physicians. The questions were designed to elicit information regarding the responsibility each school felt to this field, whether the school had in effect or was developing a program for postgraduate medical education, as well as data about important facets of the administration, faculty, budget, and curricular planning of such programs.

The word "program" was chosen deliberately for these questionnaires as a word having a broad enough meaning to encompass the various kinds of primarily educational activities that constitute postgraduate medical education. These activities include courses, both intramural at the school and extramural at outlying circuit centers, as well as cooperative educational efforts of other kinds between medical schools and hospitals or between medical schools and medical societies. Some of this information from the medical school questionnaires is reported in the section on Medical School Activities in Postgraduate Medical Education.

Questionnaires similar to those sent to medical schools have been prepared for mailing to hospitals and medical societies active in postgraduate medical education. These were not mailed earlier to avoid possible conflict with the postgraduate course forms used to obtain information for the annual list published last month in THE JOURNAL. The replies from hospitals and medical societies, together with the replies already secured from the medical schools, should provide much useful information for the further studies by the Council in this field. Following the report on medical school activities will be found the report on postgraduate courses for practicing physicians, based on the analysis of courses offered from Sept. 1, 1955, to May 30, 1956.

## MEDICAL SCHOOL ACTIVITIES IN POSTGRADUATE MEDICAL EDUCATION

Nearly three-fourths of the approved or newly developing American medical schools are engaged to some degree in programs for the education of practicing physicians (table 28). Many of those not so engaged as schools report participation by their faculties as individuals in programs conducted by medical societies and nonmedical school hospitals. It should be pointed out that 10 of those schools having no such programs as schools are located in cities in which other medical schools are active in this field.

TABLE 28.—*Medical School Activities in Continuation Education Programs for Physicians*

| | |
|---|---|
| Number of schools engaged to some degree in postgraduate medical education programs | 63 |
| Number of schools now having no such programs as schools | 22 |
| Of which, 2 are developing programs | |
| 3 are two-year schools | |
| 1 is an entirely new school | |
| 1 cooperates with another school | |
| 12 are privately owned schools | |
| 3 are state universities | |
| 22 | |
| Total of approved or newly developing medical schools | 85 |

The amount of activity by the schools varies greatly in the field of postgraduate medical education. Of the 63 schools reporting some activity, this varied from one school offering one course a year with a total enrollment of 36 physicians to another school offering 22 intramural courses, traineeships in many departments, 12 circuit course centers visited monthly, correspondence courses, and other educational activities totaling more than 2,000 physician enrollments a year.

In response to a request for a statement from the dean of each school of its sense of responsibility toward this third phase of medical education, most stated that their educational efforts should include postgraduate programs. On the basis of such statements and of present activities reported, 72 medical school faculties feel some responsibility in this field. Of these, 40 schools' questionnaires contained a statement that indicated that postgraduate medical education is one of the major parts of their educational activities, or should be, together with fulfilling their responsibilities to the undergraduate and graduate phases of medical education. Though 6 of these 40 schools do not have postgraduate programs now, 2 are developing them. The other four do not have the faculty or budget that would permit the implementation of this sense of obligation they express to the continuing education of physicians. Even among schools presently engaged in such programs, a significant number expressed the

need for additional funds that would permit them to expand their postgraduate program activities by adding faculty personnel and facilities.

Most of the schools (52 of the 63) active in postgraduate medical education have a faculty member other than the dean with the assignment for postgraduate program planning and coordination. Such a director or assistant dean nearly always has other academic or administrative responsibilities. In about half the schools having such a designee, the individual heads a department, division, section, or committee responsible for the postgraduate medical education program of the school. The policies regarding such a program usually are determined by a faculty committee, which may be the executive faculty or a special committee, often in consultation with the dean and others.

Most of the schools design their programs or expect participation by physicians of a geographical region, usually a single state or a part thereof, though in the central and western states such a region may include more than one state. Ten of the schools, including three state universities, do not orient their programs regionally and expect physicians from other regions to attend.

Although 51 of the 63 schools having postgraduate programs design them for physicians in general practice as well as for physicians in specialty practice, though often in separate courses, 11 of the schools design their postgraduate programs exclusively for physicians in general practice. One school offers continuation courses solely for specialists. Several schools also mentioned programs for ancillary medical personnel, such as nurses and medical technologists.

Eighteen of the 54 medical schools answering this question reported having some kind of educational affiliation of postgraduate program significance with community or small regional hospitals. Seven of the 18 each had such an affiliation with more than 10 community hospitals. Of the 38 not having such affiliations, 18 of the schools reported comparatively small postgraduate programs.

## POSTGRADUATE COURSES

Postgraduate courses for practicing physicians are not the only worthwhile kind of continuation education. As compared with reading of the medical literature, consultation with professional colleagues, and medical society and hospital staff meetings, however, postgraduate courses for physicians have several advantages for study as an index of the stage of development of this phase of medical education. First, postgraduate courses are or should be primarily educational activities for physicians in practice. Second, information on their administration, financing, faculty, advance planning, content, and enrollments can be obtained. Hence, third, their educational value can be estimated.

Such information and its evaluation cannot be obtained regularly or reliably for individual medical reading and consultations between physicians. Although some medical society meetings have scientific sessions of great interest and educational merit, such meetings often are not primarily educational in orientation because of the necessary business to be transacted, as well as because of other factors. An important reason for omitting such meetings from the current course list and from the analysis of the 1955-1956 attendance figures was the incompleteness of data on such meetings.

There are other activities with significant implications to postgraduate medical education that are not included in this section on postgraduate courses. Many of the hospital and medical school conferences that are scheduled as a part of the internship and residency educational programs also attract staff physicians and others in local practice because of the educational merit and interest of such conferences. They can be significant in the postgraduate education of the attending physicians not only because of their intrinsic worth but also because their more frequent and regular occurrence provides a more continuous educational program than can sporadic attendance at courses. Such conferences are not included as "courses" in this report. Also not included are the educationally significant programs for staff physicians cooperatively arranged between medical schools and community hospitals. These account for the difference in number of medical schools listed in table 28 as having active postgraduate programs and those listed in table 29 as offering courses.

TABLE 29.—*Numbers of Institutions and Organizations Offering Courses**

| | 1955-56† | 1956-57‡ |
|---|---|---|
| Medical schools | 49 | 44 |
| University affiliated graduate and postgraduate schools and public health schools | 6 | 6 |
| Non-university affiliated graduate and postgraduate schools | 2 | 2 |
| General medical societies (national, state, interstate, and county) | 10 | 12 |
| Specialty medical societies (such as American College of Physicians) | 10 | 15 |
| Academies of General Practice | 3 | 6 |
| Hospitals, including VA hospitals | 25 | 43 |
| Government institutions (Army, Navy, USPHS) | 8 | 11 |
| Other (heart associations, diabetes associations) | 16 | 33 |
| | 133 | 171 |

* For interpretation of table, see text.
† Nine-month year.
‡ Twelve-month year.

Each year the Council on Medical Education and Hospitals solicits information from hospitals, medical societies, medical schools, and other organizations regarding postgraduate courses for physicians to be offered in the coming year and publishes the information submitted in a tabular list in THE JOURNAL. The current list for the year beginning Sept. 1, 1956, was published in the July 28 issue of THE JOURNAL.[14]

Continuation courses for physicians are presently thought to consist of planned activities for doctors of medicine now in practice intended to refresh physicians in various aspects of their basic medical education, to provide information on new developments in medicine, and to stimulate further educational efforts by the participants. Such courses ordinarily do not lead either to credit toward graduate degrees or to credit toward fulfilling the educational requirements for specialty board certification. Postgraduate courses represent several different types of educational pattern.

Best known, perhaps, is the "refresher" type of course that was so heavily in demand by physicians returning to civilian practice from the armed forces at the end of World War II. Such a course, whether it be entirely refresher or offering all new material, may be defined as a carefully planned and scheduled educational program of relatively short duration as com-

pared to a medical traineeship or a residency program. A refresher course is offered in its entirety at the hospital, medical school, society, clinic, or cooperating institution and may be either continuous or intermittent. An identical course except in location is the circuit course, which is an intermittent refresher course offered at several locations in the region on a regularly scheduled basis.

Returns from the 1956 course questionnaires used to compile the current list indicated objection by a number of institutions to calling any of their courses "refresher courses," because so much of the material covered was new. As a result, the term "refresher" was dropped from the current list in favor of purely time and place designations.

Another type of course in which medical schools and other medical centers are becoming increasingly interested is the "medical traineeship," in which a few physicians at a time by arrangement with the department head concerned have a residency-type experience with participation in residents' conferences and ward rounds but usually without patient responsibility. This experience may be of any duration. There is usually a minimum period set by each institution offering this opportunity that may vary from two weeks to six months. Usually there is a maximum duration of less than one year with the thought that a year or more of such continuous training could better be as a resident in an approved program. The medical traineeship as a rule does not provide either housing or formal credit and generally does not involve night or emergency-room duty. Only a very limited number of physicians can be taken into a single department at a time on this basis, which seriously limits the availability of this type of postgraduate course in any single institution. There are other variations of course pattern, such as a correspondence course in the interpretation of electrocardiograms for those physicians who have already taken a primary course in this subject at the institution.

In reporting postgraduate course activity in the past year, based on an analysis of the questionnaires and attendance returns from the sponsors, three factors have been introduced this year that alter the picture considerably compared with previous years. First, the data encompass only a nine-month period (Sept. 1, 1955, to June 1, 1956) rather than a calendar year, because of the early deadline required for publication of this report as well as because of a transfer in its printing to another city. Second, the data presented are limited to the continental United States rather than also including Canada and Hawaii as in previous years, because of the seriously incomplete returns from outside the continental United States this year. Third, some medical society meetings and assemblies that were called courses in previous years have been deleted from the analysis of courses for reasons previously stated. All of these factors reduce the number of courses and their attendance, making it impossible to provide a meaningful comparison with either the number of courses or the attendance in previous years.

The number of institutions and organizations offering courses in the nine months of 1955-1956 compared with those proposing to offer courses in the calendar year beginning Sept. 1, 1956, is listed in table 29. This table does not represent a total picture of postgraduate medical education activities in the continental United States by the various types of institutions and organizations listed. The table represents only the "course" type of program. Other types of postgraduate programs are not represented in the table or in subsequent data.

It should be noted that table 29 appears to represent less activity by medical societies in postgraduate courses than is actually the case. This particularly applies to the academies of general practice. Such societies often co-sponsor courses that actually take place at hospitals and medical schools. In order to avoid duplication, such courses are attributed to the institution in which the course occurred rather than being credited to the co-sponsor. The activity of hospitals in postgraduate courses in 1955-1956 is not completely represented in table 29 because all hospitals having approved internship and residency programs were not queried regarding postgraduate courses in 1955 as they were for the current 1956-1957 list.

The number of courses, excluding medical society meetings, reportedly held in the continental United States in the nine-month period from Sept. 1, 1955, to June 1, 1956, were 886, with a total physician attendance of 37,081. There were about an equal number of courses of less than five days' duration (439) and courses of five or more days' duration (417 courses).

The majority of courses (524 of 886) were designed for physicians both in general practice and in specialty practice. The courses designed exclusively for physicians in general practice numbered 211, and the total of courses designed for physicians in full-time specialty practice was 149. Two courses did not specify for which group of physicians the course was designed. So many of the sponsors did not supply attendance figure breakdowns as to the field of practice of the enrollees that such attendance figures are unknown for the year 1955-1956.

Of the total courses for the nine-month period of 1955-1956, medical schools offered about half the courses and 36% of the hours. If the courses offered by other organizations than hospitals, medical societies, and medical schools were not counted, 450, or 74%, of the remaining courses were offered by or in conjunction with medical schools; 74, or 12%, by hospitals; and 84, or 14%, by medical societies. As was pointed out in the discussion of table 29, this does not provide an adequate view of the interest of medical societies because the frequent co-sponsorship of courses is not taken into consideration in such figures to avoid duplication of numbers of courses and hours.

The non-university affiliated graduate and postgraduate schools provided 184 courses, or 20% of the total courses offered, containing 41% of the total instructional hours, but had only 1,696 or 4.5% of the total attendance.

Educational methods vary significantly with the type of institution or organization offering the courses. Purely passive methods consisting of lecture and demonstration courses, in which the physician enrolled is not participating except by his presence in the room, characterize courses offered by medical societies. These methods are in the minority in the courses offered by hospitals. The more active participative methods of instruction that include ward rounds, examination of

patients, and group discussions were used in 84.7% of the postgraduate courses offered by hospitals, 59% of the courses offered by medical schools, and in only 22% of the courses offered by medical societies. In this respect, hospitals seem to use their facilities effectively in more of their postgraduate courses than do some medical schools. The hospitals here referred to are not the university or primary teaching hospitals of medical schools, for such medical school hospitals are attributed to medical schools in this study. In view of their resources, it is not surprising that 90% of postgraduate courses offered by federal institutions used active methods of instruction.

The lecture with or without lantern slides is the traditional and perhaps least effective method of instruction. The size of the audience for a lecture is immaterial and may be in the hundreds or thousands. Probably for this reason, it is favored at medical society meetings where large groups must be expected. However, this method is assuming much less importance in the undergraduate curriculums of medical schools in favor of methods in which the student has a more active role. Such methods include laboratory work for individuals and for small groups, project work by small groups, ward rounds and seminars for small groups, and the examination and presentation of patients by the students themselves. These more participative methods of education require more instructors per unit of enrollment and are more expensive, as medical school administrators have discovered.

Courses using more active teaching methods require more careful planning, and it is often necessary to limit the number of students enrolled in any one course using such methods. Yet it has been found that these techniques are more effective in the education of undergraduate medical students. They form the basis of all graduate education. The present relative lack of their use in postgraduate medical education may be one of the problems in this field. It is surprising that 41% of the postgraduate courses by medical schools in 1955-1956 used solely lectures, panels, and demonstrations as the methods of instruction. Regarding subject matter, the most numerous courses were those in "general medicine" (134 courses), which usually covered topics in several fields of practice. These courses had the greatest total attendance of physicians (19,748).

Attendance figures both for the past year (1955-1956) and for previous years are subject to so many variables that great caution should be used in drawing conclusions from such numbers. What they actually represent is in any case questionable because of the different ways such figures are collected as well as the different possible realities they represent. There is no way at present, for instance, of knowing whether an attendance of 100 for five courses by an institution means an enrollment of the same 20 physicians in the five courses, or whether it represents 100 different physicians each enrolled in one course. At one institution reporting a not unusually large total attendance figure for all the courses, the attendance means neither enrollments nor actual attendance. In that institution, each physician at each session signs his name to a sheet of paper and the total number of names is recorded by a clerk. At the completion of the course, all the numbers representing attendance at each session are totaled to give the "attendance" for the course. Although only 15 physicians were present, for instance, if they each attended all eight sessions of the course, the "attendance" would have been reported as 120.

The significance of attendance figures to postgraduate course activity is further blurred if the registrations at some medical society meetings are counted in total attendance, as may have been done in some previous years. The tens of thousands of physicians registering at medical society meetings can greatly swell total attendance figures, increasing the apparent interest in and attendance of postgraduate courses.

It would seem desirable henceforth to request enrollments rather than attendance numbers, realizing that the first variable factor mentioned would still exist. Information on the total number of physicians involved would still not be present. Only a central registration of all course enrollments by each individual physician would secure that information.

Most of the data so far secured on postgraduate medical education have been quantitative rather than qualitative. Postgraduate medical education should be mature enough to begin to emphasize the quality of the experience as well as its quantity. The success of great enterprises does not depend upon numbers alone, to paraphrase the expression of William Lloyd Garrison in "The Liberator."

## MEDICAL EDUCATION AND NATIONAL DEFENSE

### SELECTIVE SERVICE SYSTEM AND DEFERMENT ELIGIBILITY

The following information has been obtained from the chief medical officer of the Selective Service System National Headquarters, current to May 4, 1956. The responsibility for primary classification of registrants rests with Selective Service local boards. If a person or his employer (college, medical school, or hospital) has requested his deferment and he has been classified as available for military service, the person or his employer may, within 10 days of the mailing of the notice of classification, file an appeal. If the state appeal board should sustain the classification, the registrant or his employer may, if there is a dissenting vote in the appeal board, file a written request with the local board to have the decision appealed to the president of the National Selective Service Appeal Board. If there is no dissenting vote, the state or national director of Selective Service may appeal the case to the President.

The "college student certificate," SSS Form 109, continues to be prescribed for the use of institutions of higher learning, including those of medicine, in furnishing the local boards information regarding registrants who are enrolled as students in those institutions. These forms should be submitted to the local boards by the educational institution on request of the registrant. However, the mere filing of such a form does not constitute a request for occupational deferment, since, in order to establish the right of appeal as an interested party, a written request from the college or employer for occupational deferment must accompany the form. The registrant has the right of appeal if exercised in the prescribed 10 days. He may make his appeal informally in writing.

### Eligibility for Consideration for Deferment

The law empowers the President to provide for the deferment of any person whose deferment is equitable and in the national interest. Furthermore, it is the sense of Congress that provision should be made for the annual deferment from training and service of premedical, predental, and allied preprofessional students in numbers equal to those at present (1950) in attendance at colleges and universities as outlined in the general student deferment program. The President is also directed to establish a national advisory committee to advise the Selective Service System and to assist state and local advisory boards in selecting the needed medical, dental, and allied personnel.

Sections 1622:15 and 1622:25 of the Selective Service Regulations specify the conditions under which students pursuing programs of higher education may be considered for deferment. Within these specified requirements, students of the healing arts are considered for deferment in the same manner as students pursuing other undergraduate or graduate courses at colleges, universities, and similar schools.

Any student not previously deferred who is pursuing a full-time course of study is entitled to a single period of statutory deferment, Class 1-S, until the end of the academic year. Such deferment does not preclude the possibility of later deferment in Class 2-S. Students whose activity in study, research, medical, or other endeavors is found necessary to maintenance of the national health, safety, or interest may be deferred in Class 2-S until completion of their college training, provided they maintain satisfactory scholastic records. A student who is deferred for study extends his liability for military training and service up to his 35th birthday instead of his 26th, as prescribed for registrants who have never enjoyed a deferment.

In selecting a student for deferment in Class 2-S, the Selective Service local boards may, at their discretion, be guided either by the score made by the student on the Selective Service College Qualification Test or by his record of academic performance. The college qualification test is given for the Selective Service System by the Science Research Associates, Inc., of Chicago. At present, in order to be eligible for deferment on the basis of this test, an undergraduate student must make a score of 70 or more. SSS Form 108 has been prescribed for furnishing to the local board the score made on this test. This score is confidential and may be divulged by the local board only to the registrant or to one holding his written consent.

To qualify for deferment on the basis of academic performance, the nonprofessional student must have maintained the following standing among the male members of his class: freshman year, upper one-half; sophomore year, upper two-thirds; and junior year, upper three-fourths. A student accepted for admission to medical school after July 1, 1951, for the class next commencing may be deferred, provided that, during his last full-time year at a college or university, he was ranked among the upper one-half of the male members of his class or had a score of 70 or more on the Selective Service College Qualification Test.

A student accepted for admission by a graduate school after July 1, 1951, as a full-time student for the class next commencing may be deferred provided that, in his last full-time academic year in a college or university, he achieved a scholarship standing among the upper one-fourth of the male members of his class or scored 80 or more on the qualification test and provided that the graduate school certifies that he is meeting the degree requirements. Decisions concerning deferment of American students enrolled in foreign universities, including medical students, are the responsibility of the local boards. The local board may accept or reject any claims or evidence presented for deferment.

### Status of Interns and Residents

The Selective Service System has always recommended the deferment of graduates of medicine to complete one year of internship training. Recently, and in order to prevent calling men of priority 3 who are in the higher age brackets, Selective Service has stated that men, to be given favorable consideration for deferment to complete a residency or more than one year of internship, should be absolutely essential to the operation or maintenance of the hospitals where they are employed or that they be among those selected by the Assistant Secretary of Defense (Health and Medical) and recommended for specialty training necessary in the staffing of the hospitals of the armed forces. The Selective Service System is of the opinion that there is a sufficient number of young physicians who have satisfied their military liability or who are physically disqualified for military service to satisfy the requirements of the hospitals for residents and to provide for specialty training for civilian needs.

Selective Service has agreed to recommend to the Selective Service local boards the continued deferment for the second year of residency training through fiscal 1957 of 300 residents (less normal attrition) who were deferred for the first year of residency training during the fiscal year 1956 and, in addition, will recommend the deferment of 900 during fiscal 1957. These 900 would be 500 from the graduating class of 1955, who will finish their internship in 1956, and 400 from wherever the Assistant Secretary of Defense may select them. It is expected that this program will be continued from year to year after the expiration of the special provisions of the Universal Military Training and Service Act. The numbers to be recommended for deferment would be determined year by year.

All young physicians participating in this program are to be commissioned in the reserve component of one of the armed forces, and they are to be selected by the Assistant Secretary of Defense (Health and Medical) for such training. The request for deferment is to pass from the individual to the Assistant Secretary of Defense (Health and Medical) and then, if recommended, will be forwarded through national headquarters of the Selective Service System to the respective local boards of that system.

The National Advisory Committee to the Selective Service System has indicated that all physicians in priority 1 and priority 2 and those in priority 3 born after Aug. 30, 1922, will be needed by the armed forces and has advised that they apply for commissions about the time of completion of their internships. A few persons in these categories may be recommended for deferment by the Selective Service local boards for teaching, research, or public health or because they

are rendering essential service in isolated communities and cannot be replaced.

In addition, the only persons in this group who can justifiably be recommended for deferment are those who are accepted for training in the scarcity specialties and whose services are required to meet the essential needs of medical and dental schools or hospital services. The specialties in which critical shortages exist are anesthesiology, physical medicine and rehabilitation, psychiatry, radiology, neurology, pathology, public health, orthopedic surgery, oral surgery, and the basic medical sciences. Those few persons in these groups for whom deferment is necessary may be deferred in Class 2-A by the Selective Service local boards. The recommendation of the advisory groups in all such cases is desirable.

### Status of Faculty Members

Since the majority of the faculty members of medical schools are under 50 years of age, they are required to register with the Selective Service System as indicated under Public Law 779. No policy has been announced by the Selective Service System on the granting of deferment to faculty members, except that recently teachers of medicine have been mentioned in a Selective Service operations bulletin as being in a critical occupation to which local boards should give special consideration. The National Advisory Committee has recommended that, as a general policy, essential members of medical, dental, and veterinary faculties be held in their teaching positions until such time as replacements are found. This recommendation applies especially to persons in the basic science departments and includes persons in priorities 1 and 2. This policy is not a blanket recommendation for deferment from military service for all teachers. Part-time teachers, who devote only a small portion of their time to teaching, and certain of the younger full-time teachers in priorities 1 and 2 will be expected to enter the military services.

### Current Status of the "Doctor-Draft" Law

The "Doctor-Draft" law was first approved Sept. 9, 1950, as Public Law 779, 81st Congress, an amendment to the Universal Military Training and Service Act. It has subsequently been amended by Public Law 84, 83rd Congress, approved June 19, 1953; Public Law 403, 83rd Congress, approved June 18, 1954; and Public Law 118, 84th Congress, approved June 30, 1955. These amendments, which have been included as Section 4(i) of the Universal Military Training and Service Act, are known as the "Doctor-Draft" law.

The effective date of the Universal Military Training and Service Act, as now amended, is extended to July 1, 1959, while that part pertaining to the registration and induction of physicians, dentists, and allied specialists ("Doctor-Draft" law) is extended to July 1, 1957. No change was made in the age limit prescribed in the previous amendments, which required that all physicians, dentists, and allied specialists under the age of 50 must register with the Selective Service System local boards when required to do so by the proclamation of the President. Therefore, all new medical graduates under the age of 50 must register with their Selective Service local boards as physicians, regardless of any previous registration, within five days of the receipt of the degree of doctor of medicine, provided they do not hold a commission in an armed forces reserve component. However, Public Law 118, of the 84th Congress, did relieve any physician who had attained the 46th anniversary of his birth from liability of induction. When the degree is not granted by the school until completion of an internship, this special registration is accordingly deferred.

As under previous provisions of the act, registrants will be arranged in four priorities signifying the order of induction. However, the criteria for such an arrangement under these priorities have been modified. The major changes enacted by the new amendments are those that provide for greater recognition of prior military service. A registrant will now receive credit for all service performed as either an officer or an enlisted man since Sept. 16, 1940, regardless of whether it was before or after participation in an AST or V-12 program, or deferment by the Selective Service System for professional education prior to March 31, 1947. Also, recognition is given for military service performed in the armed services of a country allied with the United States prior to Sept. 2, 1945, while so allied.

Whereas, formerly physicians who were educated in part or in whole at government expense or who were deferred by the Selective Service System while completing their professional education needed 21 months of service to qualify for assignment in priority 4, they now need only 17 months. As a result of this change, a number of physicians formerly in priorities 1 and 2 have been reassigned in priority 4. The periods of service for men called to active duty or inducted under the new law were also revised. Those with 9 months or less of service must serve 24 months. Those with 9 to 12 months will serve 21 months. Those with 12 to 15 months' service will serve 18 months, and those with 15 to 21 months will serve 15 months. Those physicians in priority 4 who have had 21 months or more of service since Sept. 16, 1940, are not liable to induction or recall, except in time of war or national emergency declared by Congress.

"Active service" and "active duty" are defined as full-time duty since Sept. 16, 1940, in the service of the United States Army, Navy, Air Force, Marine Corps, Coast Guard, or Public Health Service, including reserve components; time spent during World War II by conscientious objectors in work of national importance; service performed before Sept. 2, 1945, in the armed forces of countries that were allies of the United States during World War II; and service performed as a physician or dentist for the Panama Canal Health Department between Sept. 16, 1940, and Sept. 2, 1945.

Specifically excluded from consideration as "active service" is time spent in V-12 or AST programs in military internships, residencies, or senior student programs; time spent in military service for the sole purpose of undergoing physical examination; and training entered into after June 29, 1953. The law continues to permit deferment of those persons whose activities are essential to the national health, safety, or interest.

It is the duty of the National Advisory Committee and the voluntary state and local committees of the Selective Service System to make recommendations to the Selective Service System concerning the essential-

ity or availability of special registrants who are being classified by their local boards. This duty includes recommendations concerning residents, faculty members, and those engaged in essential laboratory and clinical research.

Public Law 403, approved June 18, 1954, amended the so-called "Doctor-Draft" law and makes it possible for the armed forces to return to duty, but in enlisted status, persons serving under the "Doctor-Draft" law whose loyalty is questioned or for security reasons. This amendment, therefore, removed the mandatory requirement of Public Law 84 that physicians and dentists be given commissions.

The latest amendment, Public Law 118, 84th Congress, provides that if any physician special registrant, after attaining the 35th anniversary of the date of his birth, applies or has applied for a commission in one of the armed forces as such and is or has been rejected for commission on the sole grounds of physical disqualification, he is not liable for induction.

## MEDICAL EDUCATION FOR NATIONAL DEFENSE

The following information on the current status of Medical Education for National Defense has been obtained from the national coordinator of this project. The program of Medical Education for National Defense (MEND) is now active in 25 of the American colleges of medicine and a number of others are on the waiting list for affiliation. The 25 colleges are as follows: Baylor, Buffalo, California (San Francisco), California (Los Angeles), Cornell, Colorado, Duke, Emory, Georgetown, Illinois, Kansas, Louisiana State, New York University, Maryland, Michigan, Ohio State, Pennsylvania, Pittsburgh, Temple, Tufts, Vanderbilt, Medical College of Virginia, Washington (Seattle), Washington U. (St. Louis), and Wisconsin.

MEND is a function of the Joint Committee on Medical Education in Time of National Emergency, representing the Council on Medical Education and Hospitals of the A. M. A. and the Association of American Medical Colleges. MEND's program has been endorsed by both parent organizations as well as by the medical officials of the Department of Defense, the U. S. Public Health Service, and the Federal Civil Defense Administration.

The purpose of the program is to encourage the teaching of principles of military and disaster medicine by regular faculty members of our medical colleges. Nothing is mandatory; each faculty is free to accept or reject any part of the program not consistent with the local philosophy of medical education. All emphasis is on medical rather than military topics. It is hoped that the problem of national preparedness in medical education can be solved by interested faculty members on a local basis and under local control rather than through such methods as the establishment of a federal medical school or through direct federal intervention in curricular content.

During 1955-1956 MEND sponsored the following activities: (1) Symposium on Aviation Medicine, Randolph Air Force Base, attendance 67; (2) Symposium on Infectious Disease Problems, Great Lakes Naval Training Center, attendance 70; (3) Symposium on Radiobiology, Walter Reed Army Institute of Research, attendance 127; and (4) Deans' and Coordinators' Orientation Tour attended by 45 to Army, Navy, Air Force, and Public Health Service facilities.

Activities at the 25 colleges included special lectures, conferences, and demonstrations in the following subjects: surgery of trauma, wound ballistics, war wounds, radiobiology, defense measures to chemical and biological warfare, aviation medicine, management of mass casualties, civil defense responsibility of the medical profession, infectious disease problems in disaster situations, and others. The national coordinator of MEND has an office at the Bureau of Medicine and Surgery, Department of the Navy, Potomac Annex, Washington 25, D. C.

## ARMY, NAVY, AND AIR FORCE PROCUREMENT PROGRAM

The following information summarizing the Army, Navy, and Air Force procurement programs has been obtained from the office of the Assistant Secretary of Defense (Health and Medical), current to June 13, 1956.

### Army

#### EARLY COMMISSIONING PROGRAM FOR MEDICAL STUDENTS

Medical students may apply for a commission in the grade of second lieutenant, MSC-USAR, for inactive duty without pay and allowances while attending medical school. Students participating in this program will be obligated to accept superseding appointments in the grade of first lieutenant, MC-USAR, upon graduation, and to serve on duty for a period of two years upon completion of internship, if applicable. Persons appointed under this program will be assigned to Ready Reserve units in appropriate MC vacancies in TOE and TD troop program units, USAR schools, and USAR Control Groups (Annual Training).

#### CLINICAL CLERKSHIP TRAINING PROGRAM

Participants in the Clinical Clerkship Training Program will be medical students at the junior-senior level, who have indicated their interest in the Army medical service and who now hold appointments in the MSC-USAR, as either second or first lieutenants, or will be commissioned in sufficient time to participate in the program. A limited number may also participate in the program as "student employees" under Civil Service. Students who participate in the program in officer status must volunteer to perform 45 days of active duty for training (42 days—6 weeks for training and 3 days for travel). Students assigned to USAR Control Group (Annual Training) will fulfill their annual requirements for active Reserve participation by performing the above 45 days of active duty for training. Students who are assigned to a TOE or TD Reserve unit or a USAR School will perform the 45 days of active duty for training "in lieu of" the "summer camp" requirement with their unit. The program will consist of six weeks' instruction at Army teaching hospitals, which will be divided into one week of military instruction, and two 2½-week periods, one embracing internal medicine and its subspecialties and the other embracing surgery and its subspecialties.

#### SENIOR MEDICAL STUDENT PROGRAM

Students selected for participation in the Senior Medical Student Program will be commissioned as

second lieutenants, MSC-USAR, and will be permitted to continue their studies in their respective schools as officers on active duty with full pay and allowances until they complete their academic requirements for the degree of doctor of medicine. Upon completion of their medical education, selected students will be required to accept appointment in the grade of first lieutenant, MC-USAR; they must agree to participate in the National Intern Matching Program, Incorporated, and serve three years on active duty immediately following their civilian and military internship. This includes the obligated time under the Universal Military Training and Service Act, if applicable. Participants who are not matched for an Army internship will be released from active duty for one year to allow them to complete a civilian internship, and they will then be recalled to active duty for three years at the end of that 12-month period.

MILITARY INTERN PROGRAM

Selected graduates of approved medical schools will be commissioned as first lieutenants, MC-USAR, and will be ordered to active duty for the purpose of completing a 12-month internship in a military hospital. Individuals participating in the program will not incur obligatory service; however, those individuals who will be liable for military service under the provision of any law will be required to serve that obligation immediately upon completion of their internship.

**The Ensign, 1995 (Medical) USNR Program**

After passage of the Selective Service Act of 1940, many medical students who were obligated for military service by the act indicated their desire to affiliate with the Naval Reserve in order to assure that their period of active duty would be with the Navy's Medical Department. To make this possible and to provide deferment from active duty until graduation, the Ensign, Probationary (Medical) Program was established before the onset of World War II. The first appointments late in 1941 were limited to third-and-fourth-year medical students attending class "A" (approved) medical schools. Within a few months, however, the program was expanded to include first-and-second-year medical students, and it has since come to be known as the Ensign, 1995 (Medical) Program.

The number "1995" is a designator used to identify officers within the Department of the Navy by a code system. The first three digits, 199, indicate that the officer is under instruction in a civilian school; the last digit, 5, indicates an officer of the Naval Reserve. Thus, 1995 followed by (Medical) refers to an officer of the Naval Reserve with the rank of ensign under instruction in an accredited medical school.

The qualifications for appointment as Ensign, 1995 are as follows:

A. Sex—men and women.

B. Age:

(1) Men and women with no prior military service should be at least 19 and of such age that upon expected date of graduation, they will be under 33. The maximum age limit for men and women with prior active military service may be adjusted on a month-for-month basis, depending upon the number of months of active military service performed, but in no case to exceed 36 months. Applications cannot be accepted from any person who will have passed his 36th birthday when he becomes eligible for superseding appointment in the grade of Lieutenant (junior grade) following graduation from medical school.

C. Educational:

(1) Should be within 120 days of completion of all academic work required for enrollment in medical school.

(2) Should be in attendance or have been accepted for and be within six months or less of the date of the next entering class at one of the American or certain of the Canadian medical schools accredited by the Council on Medical Education and Hospitals of the American Medical Association, including approved schools of the basic medical sciences in the United States and Canada. Applications cannot be accepted from students who will attend a medical school in a foreign country other than Canada. Appointment of students who will attend a Canadian school will depend upon the proximity of the school to an Office of Naval Officer Procurement.

(3) Should NOT have commenced the final year of medical school.

D. Professional:

(1) Applicants are required to establish professional fitness and aptitude for the naval service through interviews and a review of college and employment records.

E. Physical Standards:

(1) Should be found physically qualified for appointment to commissioned status in accordance with established regulations.

The primary objectives of this program are to provide (1) an opportunity for qualified medical students to affiliate with the Naval Reserve as commissioned officers while still in medical school; (2) assurance that these officers will be able to complete their medical studies and internship prior to fulfilling their obligation for active military duty; (3) assurance that when they do enter the service, it will be with the Navy's Medical Department; and (4) a primary source of qualified candidates for the Naval Intern Program and for the Medical Corps of the Navy and Naval Reserve.

As an added incentive for membership in the Ensign, 1995 Program, there has been established a 60-day active duty research clerkship training program at naval research activities throughout the United States. This program provides orientation and indoctrination into medical research as well as on-the-job training for the undergraduate medical student during his vacation from medical school. Full pay and allowances are authorized for these officers while so serving on active duty. Medical students who are commissioned as Ensign, 1995 (Medical) USNR and who have successfully completed the first year of medical school are eligible to participate in this program. Research clerkships offer a detailed review of the specific research program being conducted at the training activity. A part of the training is spent in each research department, and the trainee serves as an assistant in actual laboratory research on a specific project under way at that time.

Present planning includes offering midshipman cruises during the summer vacation months for the undergraduate medical student commissioned as Ensign, 1995.

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As an added incentive for membership in the Ensign, 1995 Program, there has been established a 60-day active duty research clerkship training program at naval research activities throughout the United States. This program provides orientation and indoctrination into medical research as well as on-the-job training for the undergraduate medical student during his vacation from medical school. Full pay and allowances are authorized for these officers while so serving on active duty. Medical students who are commissioned as Ensign, 1995 (Medical) USNR and who have successfully completed the first year of medical school are eligible to participate in this program. Research clerkships offer a detailed review of the specific research program being conducted at the training activity. A part of the training is spent in each research department, and the trainee serves as an assistant in actual laboratory research on a specific project under way at that time.

Present planning includes offering midshipman cruises during the summer vacation months for the undergraduate medical student commissioned as Ensign, 1995.

Also established are clinical clerkships at naval teaching hospitals throughout the United States. Beginning 1 July of each year, this program offers the medical student who has completed his second year of medical school 60 days of active duty for training during his vacation from medical school. Clinical clerkships are planned to provide indoctrination and orientation into naval medicine, rotation through the major professional services of a naval teaching hospital, and performance of on-the-job training duties commensurate with the individual's professional attainments.

To assist the medical student financially, and to attract future doctors of medicine toward a career in the Navy Medical Corps, the Active Duty Senior Medical Student Program was authorized by the Secretary of the Navy last year. To be eligible for participation, the individual student must be an Ensign, 1995 (Medical) USNR, or agree to accept such an appointment if selected. Further, he must have completed his third year of medical school and be eligible for enrollment in the ensuing year. During attendance in medical school, these officers serve on active duty, receiving the full pay and allowances of their rank. In return for participation in this program, the individual serves one year plus the 24 months obligated by the Universal Military Training and Service Act, as amended.

Here are some important facts concerning the Senior Medical Student Program:

(1) This program is open to qualified students enrolled at medical schools accredited by the Council on Medical Education and Hospitals of the American Medical Association. Students who have completed their second year of medical school may make application for this training at an Office of Naval Officer Procurement. Active duty commences and continues while in attendance during their senior academic year. To be eligible for participation, he must be an Ensign, 1995 (Medical) U. S. Naval Reserve, or agree to accept such an appointment if selected. A board convened in the Bureau of Medicine and Surgery selects the candidates for participation in this program.

(2) Physical standards of this program are the same as those established for Regular Navy staff corps officers.

(3) Active duty orders are mailed to the student via the Professor of Naval Science or the District Commandant. Active duty commences upon receipt of such orders and completion of proper reporting endorsements.

(4) The student agrees, in writing, to accept a Regular Navy commission, and if a Regular Navy commission is not tendered, to accept an appointment in the Naval Reserve.

(5) In accepting an appointment in the Regular Navy or Naval Reserve, as a result of having active service in the Senior Medical Student Program as an Ensign, 1995, he is obligated to serve on active duty and to retain the commission for a period of three years. This active service will commence upon completion of not more than twelve months of a civilian or Naval Internship. Providing that the student has twenty-four months obligated military service to perform, this active duty affords a splendid opportunity to discharge the military obligation and serve an additional year in return for the benefits received in the Senior Medical Student Program. With no obligated military service to perform, upon enrollment in the Senior Medical Student Program, the student obligates himself to retain his commission for the same period of three years.

(6) As a medical student, he receives the full pay and allowances of an Ensign, 1995, while so enrolled on active duty. Pay and allowances are based on longevity as follows:

a. Less than two years and no dependents, he receives $338.58 per month; with dependents, (a member of his family or household dependent upon him for financial support) he receives $355.68 per month.

b. Over two but less than three years and no dependents, he receives $353.40 per month; with dependents, he receives $370.50 per month.

c. Over three but less than six years and no dependents, he receives $412.68 per month; with dependents, he receives $445.38 per month.

(7) In addition to the pay and allowances, the student is credited with two and one-half days of annual leave for each thirty days of active duty served.

(8) The wearing of the naval uniform is permitted only when authorized by appropriate naval authority.

(9) Timing is very important. An average of four months is required to completely process each application. 1 February each year is the absolute deadline that completed applications must be forwarded to the Bureau of Naval Personnel, Navy Department, Washington, D. C. This is necessary so that sufficient time is given to the board in the Bureau of Medicine and Surgery to pass on the professional qualifications, and the board in the Bureau of Naval Personnel to pass on the overall qualifications of each applicant. Those selected are required to meet the moral, mental, and physical standards of Navy acceptance. All applicants will be notified by individual letter of their acceptance or rejection not later than the first week in May.

(10) Upon completion of the sophomore year of medical school, the student desiring to enroll in the Senior Medical Student Program should make application at the nearest Office of Naval Officer Procurement located in the following cities:

| | |
|---|---|
| Albany 1, New York | Albuquerque, New Mexico |
| Boston 9, Massachusetts | Buffalo 3, New York |
| Butte, Montana | Chicago 11, Illinois |
| Cincinnati 2, Ohio | Dallas 2, Texas |
| Denver 2, Colorado | Houston 2, Texas |
| Detroit 26, Michigan | Kansas City, Missouri |
| Los Angeles 17, California | Macon, Georgia |
| Minneapolis 1, Minnesota | Nashville, Tennessee |
| Raleigh, North Carolina | St. Louis 1, Missouri |
| Salt Lake City, Utah | San Francisco 2, California |
| Seattle 1, Washington | Washington 25, D. C. |
| Philadelphia 7, Pennsylvania | Pittsburgh 19, Pennsylvania |
| New Orleans 16, Louisiana | Omaha 11, Nebraska |

## Air Force

The Air Force is presently sponsoring training programs for juniors and seniors in medical schools, as well as internships and residencies in both civilian and military hospitals. Applicants must be United States citizens, be morally, physically, and educationally qualified, and must not be nor have been conscientious objectors. Eligibility varies with each program according to the applicant's age.

### THE JUNIOR AND SENIOR MEDICAL STUDENT PROGRAMS

The Junior Medical Student Program is presently a "pilot study" program, offered only by the Air Force, for 200 medical students beginning their junior year in September, 1956. Selections are made on the basis of scholastic standing and military aptitude and inclination. Applications were closed as of March 1, 1956, and those selected will be appointed as second lieutenant, Air Force Reserve (MS), effective on matriculation day, and placed on extended active duty at medical school. They are required upon graduation to accept reappointment as first lieutenant, Air Force Reserve (Medical) and apply for participation in the Air Force Sponsored Intern Training Programs (either military or civilian). If matched to the Air Force for military internship, or selected for Air Force–sponsored civilian internship they will remain on active service. If not, they will be released from active duty for a year for a nonsponsored civilian internship and then recalled to active duty to complete their period of four years' obligated service incurred for their training. This time will include any obligation they might have under the Universal Military Training and Service Act.

The Senior Medical Student Program is a continuing program offered by each of the three services to 200 students in their senior year, beginning in September, 1956. Applications for this program also closed March 1, 1956. Those selected will also receive commissions, effective on matriculation day, as second lieutenant, Air Force Reserve (MS) and must also agree to accept reappointment as first lieutenant, Air Force Reserve (Medical) upon graduation and apply for internship under the terms described above for

junior medical students. However, the period of obligated service for sponsored seniors is one year less than that for sponsored juniors.

### AIR FORCE SPONSORED INTERNSHIPS, CIVILIAN AND MILITARY

The Air Force Intern Training Program, begun in 1950, is designed as a regular officer procurement program. Each year the Air Force sponsors 60 applicants in military internship selected through the National Intern Matching Program and also sponsors 100 interns in approved civilian hospitals. To be accepted, applicants must meet general eligibility requirements stated above, must not be more than 32 years of age, and must be graduates of medical schools acceptable to the surgeon general.

Selection for civilian internships is made periodically by the Office of the Surgeon General on the basis of scholastic standing, physical fitness, and military aptitude and inclination. Applications for sponsored civilian intern training beginning July 1 are closed as of April 1 each year; closing date for applications for training beginning on "off-term" dates is announced by letter annually. For military internships, applications must be submitted not later than the first week of January. Those selected are appointed effective the date of graduation from medical school as first lieutenant, Air Force Reserve (Medical). Military interns incur a minimum period of obligated service of 24 months and civilian interns, 36 months, regardless of their Selective Service classification. However, their military service obligation under the Universal Military Training and Service Act, as amended, will be discharged concurrently with this service.

Civilian interns are assigned to the hospital at which they have obtained an approved internship. Since the program is designed to cover the normal one-year internships, students who have accepted appointments to internships longer than 12 months are not favorably considered for this program. (They may not accept any remuneration from the hospital.)

Military interns are not assured assignment in any specific military hospital, but almost all are assigned according to their first, second, or third choice. Military internships are of the general rotating type so that applicants gain appropriate experience in various fields of medicine. Training is directed by military and civilian physicians and includes a wide range of clinical material, utilizing modern medical, surgical, and radiological facilities. It provides for one year of formal training in accordance with the requirements of the Council on Medical Education and Hospitals of the American Medical Association and is followed by two years of general medical duty in Air Force installations.

### RESIDENCY TRAINING PROGRAM

The Air Force residency training program, limited to members of the Regular Air Force, is conducted in both military and civilian hospitals (including nonmilitary govenment hospitals). For the year beginning July 1, 1956, the Air Force programmed for 300 training spaces in civilian hospitals and 82 in military hospitals. (It is anticipated that the latter number will be increased for residencies beginning July 1, 1957.) Physicians who enter this program are expected to remain in training until they have completed the minimum formal training requirements of the specialty boards. Interns selected for this training may enter directly from their internships without interruption if their applications are submitted in time. To be accepted, they must qualify for a Regular Air Force commission, must be a graduate of an accredited medical school, and must have completed a minimum of one year of internship in an approved hospital. Applications for residency training and a regular commission may be submitted simultaneously and may be submitted at any time after completion of three months of internship. For each year of sponsored training in a military hospital, the period of obligated service incurred is one year; in civilian hospitals, the obligation is two years for the first year of training and one year for each additional year. Air Force–sponsored interns who undertake a combined internship-residency program will be required to serve only one year of obligated service in repayment for one year of internship, military or civilian, when they successfully complete the minimum formal training requirements of a medical specialty board, if the residency is three or more years' duration. If the residency is for two years, the obligated service time for internship will be reduced only one year (i. e., to two years for civilian interns and one year for military).

Air Force residency training is available in all recognized medical specialties, including allergy, anesthesiology, aviation medicine, cardiology, dermatology and syphilology, gastroenterology, general practice, general surgery, internal medicine, neurology, neurosurgery, obstetrics and gynecology, occupational medicine, opthalmology, orthopedic surgery, otolaryngology, pathology, pediatrics, physical medicine, preventive medicine, psychiatry, pulmonary diseases, radiology, thoracic surgery, and urology.

The Aviation Medicine Specialty Training Program, leading to board certification in Aviation Medicine, is a comprehensive program of five years' duration. Applicants must be graduates of the Primary Course of Aviation Medicine and have had a minimum of nine months' practice as an Aviation Medical Examiner. Applicants must be physically and professionally qualified and be no more than 34 years of age when the class convenes. Applications must arrive at Headquarters USAF not later than Feb. 1 for the program beginning in September.

## ROLE OF VETERANS ADMINISTRATION HOSPITALS IN UNDERGRADUATE MEDICAL EDUCATION

The following information has been obtained from the department of medicine and surgery of the Veterans Administration and presents a general résumé of the role of Veterans Administration hospitals in undergraduate medical education. In those VA hospitals associated with medical schools through a dean's committee relationship, the facilities of the Education and Training Program are available to undergraduate medical students. At the present time an organized cooperative program of clinical clerkships exists in 54 VA hospitals associated with 60 medical schools.

Approximately half of recent medical school graduates have had undergraduate experience in VA hos-

pitals. During 1954-1955, 3,903 clinical clerks served on the various services in VA hospitals under the supervision of the house staff, full-time staff, and visiting faculty of the cooperating medical schools. On Jan. 1, 1956, 2,746 students were serving clerkships.

While the great majority of clerkships were served in general medical and surgical hospitals, clerkships also existed in eight hospitals for neurology and psychiatry and three hospitals for tuberculosis. VA hospitals were conducting medical clerkships with approximately 35 medical schools, surgical clerkships with approximately 30 medical schools, clerkships in neurology and psychiatry with approximately 15 medical schools, and clerkships in tuberculosis with 3 medical schools. The clerkship year falls in either the third or fourth undergraduate year in approximately an equal number of the 60 medical schools, although from 15 schools clerkships were supported in both the third and fourth years. Twenty-two medical schools had programs so organized that 100% of either the third or fourth year class served a clerkship in a VA hospital.

While not normally considered as a clinical clerk, second year medical students have been assigned to VA hospitals, predominantly for instruction in physical diagnosis, in 30 instances; 11 medical schools sent 100% of their second year classes to VA hospitals for this type of instruction.

All formal and informal educational activities are available to clinical clerks in VA hospitals, including ward rounds, clinical pathological conferences, journal clubs, specialty conferences, meetings of therapeutic boards, tumor boards, etc. All VA hospitals allow medical students free use of their medical libraries. An occasional medical school assigns clinical clerks throughout the calendar year, although the great majority restrict their activities to the school year.

Clerkships for undergraduate medical education are becoming extremely popular with medical students because of the fact that the great majority of VA hospitals conduct residency training programs without parallel internship programs. In such situations the medical student is not in competition with interns for the guidance and supervision of the hospital staff. The presence of clinical clerkships explains in large part the success of VA residency training programs in the absence of internships. While clinical clerks in no sense serve as "substitute interns," they nevertheless provide a valuable stimulus to the resident staff for whom teaching and supervising younger men is an essential requisite.

The full-time staff and resident staff of VA hospitals are enthusiastic in cooperating with medical schools in the conduct of undergraduate teaching programs, since such activity further bolsters the academic atmosphere established in those hospitals associated with medical schools for purposes of graduate medical education.

## GRANTS AND FELLOWSHIP PROGRAMS OF THE UNITED STATES PUBLIC HEALTH SERVICE

The Public Health Service grants and fellowships programs aid in the advancement of medical knowledge in the nation's research institutions by supporting research and training activities in the health, medical, and related sciences. The scope of these programs has increased tremendously during the past decade, giving impetus to the search for the basic causes underlying disease conditions and the development of more effective methods for diagnosis and treatment. The programs continue to encourage research interest in needed areas of investigation and to provide an opportunity for increasing America's supply of competently trained scientific personnel.

The National Institutes of Health, the research center of the Public Health Service, spends approximately two-thirds of its yearly appropriations for support of these grants and fellowships. The programs are administered by the Division of Research Grants in connection with each of the seven institutes of the National Institutes of Health, and other Public Health Service divisions. The National Institutes of Health sponsors a wide range of medical and biological investigations, including such specific categories as heart disease, cancer, mental disorders, neurological diseases and blindness, arthritis and metabolic diseases, dental diseases, and allergy and infectious diseases. Recognition of the importance of these programs to medical progress is reflected by the increased appropriations that Congress has allocated for this purpose during the past several years, as shown in table 30.

TABLE 30.—*National Institutes of Health Appropriations for Grants and Awards to Nonfederal Institutions, Agencies, and Individuals for the Fiscal Years 1945-1957*

| Year | Research Fellowships | Training Awards | Research Grants |
|---|---|---|---|
| 1945 | $ 28,000 | $ 29,000 | $ 85,030 |
| 1946 | 44,600 | 25,000 | 780,158 |
| 1947 | 178,000 | 250,000 | 3,576,198 |
| 1948 | 520,000 | 2,809,700 | 9,145,000 |
| 1949 | 1,115,000 | 3,930,000 | 10,871,492 |
| 1950 | 1,448,057 | 6,415,060 | 13,065,514 |
| 1951 | 1,565,000 | 6,928,200 | 16,713,000 |
| 1952 | 1,755,000 | 7,392,000 | 18,173,000 |
| 1953 | 2,024,000 | 8,194,000 | 20,374,000 |
| 1954 | 2,133,000 | 10,813,000 | 28,866,000 |
| 1955 | 2,562,000 | 11,051,000 | 33,918,000 |
| 1956 | 2,800,000 | 14,502,000 | 38,038,000 |
| 1957 | 5,397,000 | 28,075,000 | 89,697,000 |

### Research Fellowships

A new senior research fellowship category was instituted in July, 1956, intended to assist in developing individuals who are competent in basic preclinical sciences research, and concurrently to strengthen such research areas. The areas of interest in this program are anatomy, physiology, biochemistry, microbiology, pharmacology, pathology, biophysics, genetics, and the behavioral sciences. The National Institutes of Health will provide a number of such senior research fellowship awards to support investigators during the period between the completion of training, that is, two or more years beyond the doctoral degree, and eligibility for permanent higher academic appointments. This fellowship category is in addition to the four classes of fellowship awards regularly available—predoctoral, postdoctoral, special, and the student part-time research fellowship—all of which are awarded to encourage and increase the supply of American scientists primarily interested in and qualified to carry on research in medical and allied fields.

Applications for the new senior research fellowships may be made by medical schools, dental schools, and

schools of public health. Each school may submit not more than three applications in any one year. Selections will be made annually on the basis of a review by a selection committee of nongovernmental scientists and by the National Advisory Health Council. The award, which may be activated on the first day of any month subsequent to approval, will provide salary at the level requested by the applicant school, not to exceed $10,000, plus other partial research expenses, not to exceed $2,000 a year for each fellow. It is planned to assure five years of support for such research fellows, provided the Congress continues to appropriate the necessary funds for each year.

To provide flexibility in the administration of these senior research fellowships, the fellows will be free to modify their research approach, within the general confines of the preclinical science areas selected. They will be permitted also to conduct a portion of their research work in other institutions, and they may apply to the Public Health Service or any other agency or foundation for additional research grant support if needed. It is expected that institutions will assign appropriate formal teaching responsibilities to these fellows in order that they may attain a well-rounded productive career.

In addition to this new category, a substantially increased demand is anticipated in the four types of fellowships regularly awarded. Three of these four classes (predoctoral, postdoctoral, and special fellowships) are made to individual applicants and the fourth (student part-time research fellowships) to schools of medicine, dentistry, nursing, and public health, which make their own selections of student part-time fellows. The predoctoral research fellowship is awarded to candidates (U. S. citizens) having a bachelor's degree or equivalent training to enable them to pursue studies oriented toward graduate training in research related to the health sciences. The basic stipend for predoctoral fellowships is from $1,400 to $1,800, plus additional dependency allowances. The postdoctoral research fellowship, which is awarded to candidates holding a degree equivalent to an M.D., Ph.D., or D.D.S., carries a stipend of $3,400 for the first year, $3,700 for the second, and $4,000 for the third year, plus dependency allowances. The special research fellowship requires a doctor's degree in medicine, dentistry, or related fields or unusual competence in or specialized training for research. The stipend for this fellowship is determined at the time of the award. The fourth type, the student part-time research fellowship, was initiated in 1952 with grants for this purpose to medical and dental schools. Recently, it has been expanded to include schools of public health and nursing schools, in an effort to encourage students in all these fields toward a research career. Medical schools may request up to eight units of $400 each; dental schools, up to six units; and schools of public health and nursing schools, up to four units. Each unit may provide for part-time research during the school term or for full-time research for two months during any time when curriculum work is not scheduled for the student. Predoctoral, postdoctoral, and special fellowships are awarded on a competitive basis upon the recommendation of scientific committees of the National Institutes of Health. (Additional information or application forms for fellowships may be obtained from the Division of Research Grants, National Institutes of Health, Bethesda 14, Md.)

### Training Grants

The information that continually emerges from fundamental studies cannot be readily applied at the clinical level because of the lack of competent personnel trained for careers in clinical investigation. The Public Health Service training grants program is intended to augment the nation's supply of qualified clinical personnel by assisting in the establishment, expansion, and improvement of training and instructional programs in professional institutions.

Undergraduate training grants are awarded by the National Cancer Institute, the National Heart Institute, and the National Institute of Mental Health. The specific purposes of these grants are to establish, expand, improve, or continue instruction relating to the prevention, diagnosis, and treatment of cancer; cardiovascular disease and related gerontological conditions; and mental disease. Grants are made to schools of medicine, nursing, dentistry, and public health, ranging from $5,000 to $25,000 for a one-year period.

Graduate training grants are awarded by the National Heart Institute, the National Institute of Arthritis and Metabolic Diseases, the National Institute of Dental Research, the National Institute of Mental Health, and the National Institute of Neurological Diseases and Blindness. The purpose of these grants is to assist the schools in establishing and maintaining a high caliber of graduate instructional programs or to establish, expand, and improve graduate training programs in the departments concerned, as well as to make funds available for trainees' stipends. All programs supported by training grant funds must be under the specific direction of a designated program director.

### Traineeships

Traineeships are also awarded directly to American citizens having a doctoral degree in health fields, including related biological and behavioral sciences, through the National Cancer Institute, National Heart Institute, National Institute of Arthritis and Metabolic Diseases, and the National Institute of Neurological Diseases and Blindness. These traineeship awards are intended to increase the number of trained clinical investigators by encouraging medical personnel of known competence to take additional training in highly specialized areas of clinical investigation. Examples of areas of interest are the neurological diseases, ophthalmology, and senory diseases; cardiovascular diseases; arthritis, diabetes, and other metabolic diseases; and the diagnosis and treatment of cancer. Two types of traineeships are available. The regular traineeship carries a first-year stipend of $3,400; a second-year at $3,700; and a third-year at $4,000, plus dependency allowances. Special traineeships are awarded to qualified individuals who possess unusual competence for training or require specialized training for a specific problem. (Application forms for training grants and traineeships are obtainable on request to the appropriate institute.)

### Research Grants

The research grant is by far the largest of the Public Health Service grants programs, both in terms of money expended and in the number of institutions affected by such support. In 1956, nearly 39 million dollars was spent in research project support, providing for more than 3,400 awards to investigators in 372 institutions located in 47 states, 2 territories, and in 10 foreign countries.

Research grants are available from all seven institutes of the National Institutes of Health for the support of research projects falling within their respective areas of interest. The Division of Research Grants provides grants in support of research proposals that fall outside these particular areas. In addition, two new research grants programs were instituted during 1956 by other divisions of the Public Health Service, in cooperation with the Division of Research Grants. The Division of Hospital and Medical Facilities and the Division of Nursing Resources of the Bureau of State Services initiated research project support for the effective development and utilization of hospital and nursing services, facilities, and resources. The Division of Sanitary Engineering Services and the Division of Special Health Services, Bureau of State Services, also support projects investigating the public health aspects of air pollution.

Research grants are intended to increase research in medical, dental, and other professional schools and institutions and to stimulate new investigations in scientific areas needing exploration. Support of such projects indirectly aids in training junior personnel employed in the conduct of these investigations. Research grant applications are submitted by institutions in behalf of named principal investigators and for specified research proposals. Applications are reviewed by study sections composed of nonfederal scientific specialists in medical and allied research areas, who meet at stated intervals throughout the year. Final evaluation and recommendation is provided by an appropriate national advisory council. The national advisory councils, one for each institute, are composed of nonfederal personnel prominent in science, education, and public affairs. (Further information and application forms for research grants may be obtained from the Division of Research Grants, National Institutes of Health, Bethesda 14, Md.)

### Visiting Scientist Program

The National Institutes of Health also conducts a visiting scientist program in connection with the extensive research activities that are in progress in its own laboratories and in its 500-bed facility for clinical-laboratory research. This program offers two levels of appointment: (1) visiting scientist and (2) research associate in the visiting scientist program. American and foreign scientists of outstanding ability, who have a doctoral degree or equivalent training and experience, plus at least six years' postgraduate experience in research, are eligible to apply for these appointments, which can provide salary ranging from $5,400 to $12,600 a year. The purpose of this program is to increase the utility of the National Institutes of Health as a national research resource and to strengthen interrelations with the broader scientific community.

### Conferences and Symposiums

To encourage early and adequate exchange of information among investigators, numerous conferences, seminars, and symposiums are supported in connection with the grants and training programs. Many of the meetings are initiated and sponsored by the various advisory study sections of the Division of Research Grants. The members of these consultant panels, all experts in their respective fields, are able to bring together established workers in specialized areas for free discussion and interpretation of scientific advances. The Tissue Fine Structure Conference recently held at the Arden House, Harriman, N. Y., for example, was sponsored by the Morphology and Genetics Study Section. Another advisory panel, the Biophysics and Biophysical Chemistry Study Section, sponsored the Conference on Biophysics and Biophysical Chemistry, which was held in Ann Arbor, Mich., in September, 1955. The Pharmacology and Experimental Therapeutics Study Section initiated the Conference on Potential Objective Criteria for the Evaluation of Cancer Chemotherapy in Man, held in October, 1955, at Harriman, N. Y. Other meetings, such as those supported by the National Institute of Mental Health, provide orientation and training in specific services, or review and develop standards for various professions. The National Institutes of Health also provides personnel and exhibits for medical and scientific meetings of state, regional, and national scope.

In addition, the National Institutes of Health presents clinical conferences, lectures, and seminars in which there is active participation by faculty members of universities and medical schools and by staffs of other service hospitals and research centers, as well as by physicians in private practice and other leaders in the medical sciences.

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## MEDICAL EDUCATION IN THE UNITED STATES AND CANADA, 1955-1956

This issue of THE JOURNAL presents the 56th Annual Report on Medical Education in the United States and Canada as prepared by the Council on Medical Education and Hospitals of the American Medical Association. The objective of this report is to inform the profession, and others who may be interested, of the current status, developments, and trends in this important field of education. Administrative officials of medical schools and universities and representatives of other agencies have been most cooperative in submitting the information essential in the compilation of a report of this nature; for this assistance the Council is deeply grateful.

The past year has witnessed continued progress in the field of medical education. The University of Miami at Coral Gables and Miami, Fla., graduated its first class of physicians, so that there are now 76 approved four-year medical schools and 6 approved schools of basic medical science in the United States. In Canada there are 11 approved four-year medical schools and one approved school of basic medical science. The University of Mississippi and the University of Missouri admitted their first third-year students during 1955-1956 and will graduate their first classes of physicians in June, 1957. Albert Einstein College of Medicine conducted its first year of teaching, and both Seton Hall College of Medicine and the University of Florida will initiate their academic programs with first-year students this fall. West Virginia University School of Medicine continues to develop its program of transition from a two-year to a four-year program and will probably admit its first third-year class in 1959. The University of Kentucky is proceeding with its authorization to develop a full four-year medical school program.

Information received from the medical schools indicates that most of them are engaged in continuing curriculum studies and readjustments designed to meet the challenges presented by the rapid advances in knowledge and the modifications necessitated by them. Several institutions are engaged in extensive re-evaluation of their entire programs, and it is anticipated that these studies will be reflected by stimulating educational experiments in the near future. This desire on the part of medical faculties to search for, determine, and initiate new methods in keeping with the changing panorama continues to be a healthy portent for medical education and medical care in the future.

There has continued to be improvement in medical school financing, which is reflected in the budgets projected for 1956-1957. Two of the major philanthropic foundations, the Commonwealth Fund and the Ford Foundation, have made appropriations of material significance in the field of medical education in recent months. It is to be hoped that other organizations that recognize medical education as one of the essential functions of modern society will likewise add to the basic "hard money" sources so vitally necessary to the stabilization of essential programs. Grants from outside agencies in support of both research and special teaching activities show a definite gain in these projected budgets.

At intervals, it is useful for medical schools to make comparative curriculum studies in terms of time allocations and methods of instruction. This year a cross section analysis of time allocation devoted to basic medical sciences during the first two years has been prepared. These data present an opportunity for those studying curriculum problems to gain an insight into the maximum, minimum, and median time allocations devoted to these fields by medical schools. It also furnishes an opportunity to compare the relative amounts of time devoted to the utilization of teaching methods such as lectures, laboratory, conferences, and seminars. In subsequent reports, other areas of medical education will be similarly treated, so that reference data of this nature will be available to those interested in this field. The wide variation in time allocations in basic medical sciences in different institutions opens interesting philosophical questions concerning both time factor and methodology utilized.

The current report also includes a résumé of the background of the studies conducted by the Council on Medical Service of the American Medical Association in regard to the private practice of clinical faculty personnel. The "Conclusions and Recommendations" of the Council on Medical Service as presented to and adopted by the House of Delegates of the American Medical Association on June 14, 1956, are quoted in full.

Because of its ever-increasing significance, more space is devoted in this current report to postgraduate medical education. At the present time, studies are being conducted by the Council on Medical Education and Hospitals with the objective of determining the means by which the various agencies involved in postgraduate medical education can serve the most effective role in the future. Continuing education in medicine presents one of the great challenges to all

individuals and organizations, whether schools, hospitals, or professional societies, during the years ahead and is deserving of greater attention than it has received in the past.

## THE PRACTICING PHYSICIAN AND MEDICAL RESEARCH AND EDUCATION

In its Report on Medical Education in the United States and Canada, the Council on Medical Education and Hospitals highlights the inevitable interdependence of individuals in medical practice, medical education, and research. Certainly no one can deny this relationship—least of all the practicing physician, whose dependence on the other two activities is most clear-cut and direct and finds expression, perhaps often unrecognized, routinely in his daily life.

The Council centers attention on the recent report of the American Foundation entitled "Medical Research: A Midcentury Survey."[1] This report, and particularly the first volume, contains a wealth of material that should be of vital concern to every member of the medical profession, regardless of his primary field of interest. The American Foundation is to be commended for the lucid report of its thoughtful analysis of the serious problems facing medical research today. These problems are related to medical education and medical practice, and any resolution or lack of it will inescapably have a direct impact on education and practice.

It is hardly necessary to point out that medical practice and education are also beset with important questions that are clearly of significance to individuals in both fields of endeavor. Political, social, and economic changes—and indeed change in the age characteristics of the population brought about by medical research and made a part of medical practice through medical education—represent the denominator common to the more basic problems in all three activities.

Medicine labors under the single primary obligation to conduct its affairs in order that the general public welfare be best served. This obligation is shared by medical research, education, and practice. In view of the recognized interdependence, a common source of basic problems and shared primary obligation, the best interests of medicine in its total sense and the public would be well served if the differing yet similar viewpoints of leaders in medical research, education, and practice were focused on one another's problems.

## GREAT CHALLENGES IN POSTGRADUATE MEDICAL EDUCATION

Physicians have long recognized the need for continuing education throughout professional life in order to render the best possible medical care to their patients and to their communities. During recent years this need has become increasingly apparent, for advances in medical knowledge have occurred with such rapidity that even the best preparation for the practice of medicine would soon become inadequate without continuous revision of older concepts and addition of new information. This is equally true whether the physician is in the general practice of medicine or restricts his practice to one of the specialty areas. The vast field of medical literature is constantly expanding, and no physician through his individual efforts could possibly keep abreast of it all.

Over the years various means of continuing medical education have developed. They include such methods as reading current literature, professional contacts between physicians and their colleagues in medicine and allied fields, attendance and exchange of opinion in hospital staff meetings and conferences, attendance at medical society meetings, and attendance at formal postgraduate courses. These approaches have varying values, which depend upon the manner in which the individual physician utilizes them as well as on the inherent potentialities within the method itself. One of the most challenging problems confronting postgraduate medical education today is to determine the best means of communicating to physicians the fruits of research for the ultimate benefit of all medical care.

At the time of the Flexner report in 1910, postgraduate medical education was concerned entirely with attempting to repair a basically inadequate medical education rather than with the communication of current discoveries to well-educated physicians. The repair or "refresher" function of continuing education is disappearing as more adequate undergraduate and graduate medical education has developed. The current and future challenges of postgraduate medical education include the need for provision of educationally sound programs of various kinds and in sufficient quantity to meet the ever-increasing demand.

Medical schools, hospitals, and medical societies, as well as other institutions and organizations, are involved, individually and cooperatively, in postgraduate programs for physicians. Problems analogous to those that occurred as undergraduate and graduate medical education developed are present in the advancing field of postgraduate medical education.

The Council on Medical Education and Hospitals is increasingly concerned with this field, as reported in this issue of THE JOURNAL. The Council hopes to assist in the further development of postgraduate medical education as this area of education assumes an ever more important role in the period ahead.

## COOPERATION IN MEDICAL EDUCATION AND MEDICAL SERVICE

On February 6, 1928, Arthur Dean Bevan,[1] then Chairman of the Council on Medical Education, delivered an address before the Annual Congress on Medical Education of the American Medical Association entitled "Cooperation in Medical Education and Med-

1. Medical Research: A Midcentury Survey: vol. 1. American Medical Research: In Principle and Practice; vol 2. Unsolved Clinical Problems: In Biological Perspective, published for the American Foundation, Boston, Little, Brown & Company, 1955.

ical Service." In that address, he endeavored to present the functions of the medical profession, of the university, and of the public through reviewing the advances that had been made in medical education in the public interest through cooperation.

Medicine still is one of the greatest functions of modern civilization. It is, as Bevan stated, "in every day contact with every individual in every community. Without modern scientific medicine, without modern public health service, our modern civilization would soon cease to exist. Great cities, such as London, New York, Paris, and Chicago, would be impossible. They would soon rot away under great plagues as the larger centers of population did in the Middle Ages. Medical education and medical practice are not functions of the university and the medical profession alone, they are functions of modern civilization in which the entire community is vitally interested."

Bevan indicated that to secure the best medical education and the best medical practice, both preventive and curative, the cooperative support of the medical profession, the universities, and the community was necessary. He continued that "medical education cannot be safely left in the hands of the medical profession alone" and supported this contention by reviewing the chaotic situation in this field during the period when most medical schools were proprietary and relatively few were allied with, or integral parts of, universities. But he also wisely commented that "the medical school cannot be safely left in the hands of universities alone" for "uprooted from the medical profession, uprooted from the community and transplanted to the scientifically prepared soil of the university campus, the medical school will lack those things which the medical profession and the community alone can give." Bevan made a forceful plea that the best interests of medical education and medical practice could be served through preventing a line of cleavage, or a schism, from developing between the medical profession and the medical teachers in our university schools of medicine, signs of which he envisioned if both groups did not work together for a common purpose.

The misunderstandings and disagreements that have developed in recent years between some medical schools and the members of the medical profession in the areas where these institutions are located highlight the importance of the sage counsel advocated by Bevan nearly 30 years ago. Medical schools are the source of the nation's future physicians, and every physician now practicing has received his basic professional education in one of them. They are vital elements in our modern civilization. Medical schools today are conducting their activities under changing socioeconomic conditions and educational readjustments that have made adequate financing exceedingly difficult. The advance of knowledge applicable to medicine, the increasing complexity of organizing and conducting educational programs, and the growing research activities of medical schools have necessitated that some clinical faculty members devote the major portion, if not all, of their time to these tasks. The financial burden of this added need has been of such nature that many institutions have not been able to meet it without arrangements permitting individuals to augment the income received from the school through some form of practice privilege. It is in this area that most of the problems that led to the recent study of "Private Practice by Full Time Medical School Faculty" have arisen.

The "Conclusions and Recommendations" emanating from the 18-month study of the Council on Medical Service and adopted by the House of Delegates of the American Medical Association in June, 1956, have been included in the current Annual Report on Medical Education in the United States and Canada. This objective study is worthy of careful evaluation by both the medical schools and the profession. There is no logical way in which medical education can be conducted without involving medical practice. Any effort to do otherwise would make certain aspects of medical education totally impossible. The important matter is that the medical schools need the support and cooperation of the medical profession and the profession needs the support and cooperation of the schools. This is and should be a two-way street. There is no currently existing problem in this area that cannot be solved satisfactorily if the schools and the profession recognize their mutual obligations, responsibilities, and interdependence. It is not in the best interests of medical education, medical practice, or the great function medicine plays in modern civilization that "a cleavage, or schism" be permitted to grow between the medical schools and the medical profession. One way to prevent it is for medical faculty personnel to take a more active interest in the problems of the medical profession and for the medical profession to become more interested in the problems of the schools. "Cooperation in Medical Education and Medical Service" is the only logical answer to these problems.

## DIETS AND OBESITY

Elsewhere in this issue of THE JOURNAL (pages 1633, 1636, and 1700) are statements concerning the use of diets that have received considerable publicity in magazines intended for the lay population. One article discusses in some detail the components of the diet and their possible effects. Another stresses the availability of the services of the Council on Foods and Nutrition for advice on obesity problems. The third is a statement from a member of the institute at which the diet was studied. An earlier communication was published in THE JOURNAL, June 30, page 901. In view of the discussion that has been aroused, readers of THE JOURNAL undoubtedly will be interested in the three statements in this issue.

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# THE PRESIDENT'S PAGE

## A MONTHLY MESSAGE

A few weeks ago I had the pleasant task of addressing the 50th anniversary program of the Pure Food and Drug Act in Washington, D. C. In that speech I outlined the close working arrangement the American Medical Association has had with the Food and Drug Administration in the past 50 years. The story of that cooperation is so interesting that I would like to share it with you.

A. M. A. history shows that doctors were interested in, and fought for, federal laws governing the protection and marketing of foods and drugs long before 1906, the year of the Food and Drug Act and Meat Inspection Act. In the early 1880's Dr. F. E. Stewart urged the A. M. A. to recommend the establishment of a national bureau of medicines and foods, and in 1892 the A. M. A. made its first proposals for food and drug legislation to prevent adulteration.

THE JOURNAL in 1892 also recommended the establishment of a department of health and the placement of a food and drug administration under it. (As you know, this is the present setup, with the FDA under the Department of Health, Education, and Welfare.)

Just after the turn of the century a California physician, Dr. Ellis, proposed that a national organization be formed with representatives of the A. M. A. and the American Pharmaceutical Association examining and analyzing new remedies and making certain that labels were truthful and claims warranted. A committee was formed and reported at the next Annual Meeting of the A. M. A. Although the establishment of a national bureau failed after extended discussion in the House of Delegates, the effects of the pressure—brought about by the discussion—were sufficient to cause the Board of Trustees to take action later that resulted in the establishment of the A. M. A.'s own Council on Pharmacy and Chemistry.

In February, 1905, one year before the signing of the Pure Food and Drug Act, the Council on Pharmacy and Chemistry held its first meeting. Dr. Harvey Wiley, the doctor-chemist primarily responsible for the enactment of the Pure Food and Drug Act, was a charter member. In the spring of 1905 Secretary of Agriculture James Wilson told the A. M. A. that he had established a laboratory in his department's bureau of chemistry for the investigation of adulteration of drugs and medicines. So began the close cooperation between the A. M. A. and FDA.

The Bureau of Investigation of the A. M. A., too, has worked in harmony with the FDA for half a century. Also set up in 1906, the Bureau was among the first organized groups in the United States to investigate quackery. For 50 years now its primary object has been the collection and dissemination of information on nostrums, quacks, medical fads, and various other phases of pseudomedicine. A third scientific A. M. A. group cooperating with the FDA is the Council on Foods and Nutrition, organized in 1929 to evaluate nutritional claims of food processors and to discourage unwarranted, incorrect, and false promotional claims. As FDA activities increased after the 1938 law, the Council on Foods and Nutrition swung into a more positive phase—encouraging good practices in food advertising and labeling and improving the nutritional aspects of food.

A fourth group, the Council on Medical Physics, is concerned with the evaluation of medical devices and the publication of authoritative reports on the established uses and limitations of such machines and equipment. Finally, a fifth and relatively new A. M. A. group, the Committee on Cosmetics, established in 1948, promotes a better understanding of the usefulness and limitations of and health problems connected with cosmetic preparations.

So today the A. M. A. has five groups—the Council on Pharmacy and Chemistry, the Bureau of Investigation, the Council on Foods and Nutrition, the Council on Medical Physics, and the Committee on Cosmetics—serving the profession and the public and supplementing the activities of the FDA in the vital matters of foods, drugs, cosmetics, and medical devices.

All of us can be proud of the A. M. A.'s cooperation with the FDA, with the thousands of commercial establishments distributing products, and with other citizen groups in keeping the standards of America's foods, medicines, and cosmetics as high as possible.

DWIGHT H. MURRAY, M.D.,
Napa, Calif.

# MEDICAL NEWS

## CALIFORNIA

**Course on Diagnostic and Therapeutic Radiology.**—The postgraduate division of the University of Southern California School of Medicine, Los Angeles, will present a postgraduate course in the Physics of Diagnostic and Therapeutic Radiology from Sept. 7, 1956 to Feb. 1, 1957. The 20 lectures (Fridays, 4-5 p. m.) by the department of radiology at the Los Angeles County Hospital, designed for physicians preparing for the specialty of radiology, will also benefit those preparing to specialize in dermatology. Lectures will cover fundamental x-ray physics; determination of quality and quantity of radiation; tissue dosage from x-rays, radium, and radon; radiation protection; and radiation biology (tuition, $50). For further information, contact Dr. Phil R. Manning, Director, Postgraduate Division, School of Medicine, University of Southern California, 2025 Zonal Ave., Los Angeles 33.

**Personal.**—Dr. John C. Talbot, Los Angeles, associate medical director of the Pacific Mutual Life Insurance Company, has been named medical director to succeed the late Dr. Linford H. Lee. ——Dr. James T. Harrison, Van Nuys, has been appointed to succeed Dr. Robert S. Westphal as health officer of Sonoma County. Dr. Westphal is now assistant to the area director, World Health Organization, with headquarters in Alexandria, Egypt.——Dr. John W. Scott Jr., Sacramento, son of Dr. John W. Scott of Colusa, has been appointed physician for Yuba County for one year.——Dr. Harold E. Pearson, professor and head of the department of public health in the University of Southern California School of Medicine, Los Angeles, has received a John Simon Guggenheim Memorial Foundation fellowship for a year's study at the Pasteur Institute in Paris, France, where he will do research on viruses and tumors. Dr. Pearson, who has been on the medical faculty since 1944, will be on sabbatical leave from the university to accept the Guggenheim award.——Drs. Frederic N. Tyroler and Leo J. Adelstein, Los Angeles, were recently appointed new members of the state board of medical examiners. Both were named to four-year terms, succeeding Drs. Joe Zeiler and Frank W. Otto, also of Los Angeles, whose terms expired. Dr. Tyroler, a councilor of the Los Angeles County Medical Association, district 1, is a senior attending physician at the Los Angeles County Hospital and an associate senior attending physician at Cedars of Lebanon Hospital. Dr. Adelstein, vice-president and member of the executive committee of the staff of Queen of Angels Hospital, is a past-president of the Los Angeles Society of Neurology and Psychiatry and a medical examiner of the Superior Court of Los Angeles County.

## LOUISIANA

**Graduate Medical Assembly.**—The ninth annual meeting of the Southwest Louisiana Graduate Medical Assembly will be held in Lake Charles, Sept. 14-15. All physicians are invited to attend this meeting, which is approved for category 1 credit by the American Academy of General Practice. Presentations during the scientific sessions will include:

Oxygen Therapy, Albert J. Ochsner II, Alexandria.
Roentgenology in Obstetrics, William Snow, Shreveport.
Antibiotic Diseases, John H. Seabury, New Orleans.
Hazards of Steroid Therapy. Differential Diagnosis of Fever, Theodore C. Panos, Galveston, Texas.
Acute Cholecystitis, James D. Rives, New Orleans.
Dermatologic Manifestations of Some Systemic Diseases, Henry W. Jolly, Jr., Baton Rouge.
Pathological Physiology of Lower Nephron Nephrosis, Joseph F. A. McManus, Birmingham, Ala.
Differential Diagnosis and Initial Treatment of Cerebrovascular Accidents, Earl H. Rafes, Beaumont, Texas.

Drs. Ochsner, Rives, and Panos will hold a panel discussion on surgery and the cardiac patient.

**Scholarship Loan Fund.**—The Elizabeth Bass Memorial Scholarship Loan fund is being created at the Tulane University School of Medicine, New Orleans, in tribute to the late Dr. Mary Elizabeth Bass, emeritus professor in the department of medicine. Contributions may be sent to Dr. Georgiana J. von Langermann, 1430 Tulane Ave., New Orleans 12.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

## MASSACHUSETTS

**Course on Alcoholism.**—The annual 15-week evening course on alcoholism will open Sept. 19 at 7:15 p. m. at Boston University under the cosponsorship of the Boston Committee on Alcoholism and the Personnel Managers' Club of the Greater Boston Chamber of Commerce. The course will be directed by Dr. David Landau, medical director of the Boston Committee on Alcoholism, clinical instructor in psychiatry at Tufts College Medical School, and a member of the staff at New England Medical Center. The seminar aspects of the course will be conducted by Leo Lieberman, Ed. D., chairman of the psychology department at Suffolk University, Boston. The course, given specifically to meet the needs of personnel officials in business and industry in recognizing, understanding, and aiding employees whose drinking affects work efficiency, will also be directed toward hospital personnel—doctors, nurses, physical and occupational therapists, social workers, and administrators. Lectures will cover the medical and socioeconomic aspects of alcoholism and their controls, and seminars will be conducted along the lines of a clinical staff conference. Persons attending will be invited to present cases and problems for discussion and solution.

## MICHIGAN

**Physician Needed.**—With the departure of Dr. Harry F. Vail, who is scheduled to leave Sept. 1 to practice on the mainland, Beaver Island loses its only physician for the second time in four years. In 1952, Dr. Russell E. Palmer, who had been the island's only doctor for 29 years, retired. Because of the island's location, the islanders are faced with the possibility of having to abandon it unless a physician is found promptly. Two registered nurses among the permanent residents on the island are available to help in meeting the islander's health problems. The island (about 16 miles long), largest in an archipelago off the northern shore of Michigan's southern peninsula, can be reached only by plane or, during the summer, by a 33-mile ferry boat ride from Charlevoix. The only telephone on the island is at the U. S. Coast Guard station in St. James, and this community, located on the northern tip of the island, is the only town. The island has recently begun to develop as a resort area. Since 1923, the Michigan State Legislature has made a regular appropriation for a "Beaver Island Physician." The basic salary ranges from $6,493.68 to $7,642,08, plus all fees collected. The island is said to have a modern, well-equipped clinic in St. James, with a consultation room and office, waiting room, two bedrooms, a fully equipped examination room and surgery, x-ray room, pharmacy, and small utility room. Applications to fill the vacancy are being taken by Dr. Albert E. Heustis, Commissioner, Michigan Department of Health, Lansing.

## MISSOURI

**Professor of Surgery Named.**—The State University of New York College of Medicine in Syracuse has appointed as its first full-time professor and chairman of the department of surgery, Dr. C. Barber Mueller, who comes to Syracuse from Washington University School of Medicine, St. Louis, where he has been since 1951. Since 1953 he has been consultant in general surgery at Scott Air Force Base, Ill.

## NEW JERSEY

**Hospital News.**—The Atlantic City Hospital will have as visiting chiefs pro tem. Dr. Eugene A. Stead Jr., professor and chairman, department of medicine, Duke University School of Medicine, Durham, N. C., Sept. 4-7; Dr. Paul O. Klingensmith, associate professor of obstetrics and gynecology, University of Pennsylvania School of Medicine, Philadelphia, Sept. 10-14; Dr. William J. Orr, professor of pediatrics, University of Buffalo School of Medicine, Sept. 17-21; and Dr. Isidore Snapper, director of medicine and medical education, Beth-El Hospital, Brooklyn, N. Y., Sept. 24-28.

**Personal.**—Murray H. Mazer, Metuchen, was given the Dr. John J. Sheinin meritorious award for excellence of character, scholarship, and professional competence at the 42nd commencement exercises of the Chicago Medical School, June 16. The award, consisting of $100, is given anonymously by a member of the staff of Mount Sinai Hospital, affiliated with the school as a teaching hospital.——Dr. Earl J. Halligan, senior surgeon, U. S. Public Health Service, received an honorary degree of doctor of laws from Seton Hall University, South Orange, at its 100th commencement, June 9. Dr. Halligan is medical director, director of surgery, and surgeon-in-chief, Jersey City Medical Center; chief of surgery, St. Francis Hospital; attending surgeon, Margaret Hague Maternity Hospital, all in Jersey City; and consulting surgeon at St. Mary's Hospital, Hoboken; Holy Name Hospital, Teaneck; and Rahway Hospital, Rahway. He is associate editor of the *American Journal of Proctology* and *Medical Times;* secretary-general, International Academy of Proctology; and regent, International College of Surgeons.

## NEW YORK

**Promoted to Professorships.**—The State University of New York College of Medicine at New York City, Brooklyn, announces the promotion to full professor of Drs. Jack Gross of the department of anatomy and Frank C. Hamm of the division of urology, department of surgery. Dr. Gross came to the college as an assistant professor in 1952, and Dr. Hamm has been head of the division of urology as an associate professor since 1953. Dr. Hamm also holds the post of director of urology of the University Division at Kings County Hospital.

**Syracuse Faculty Appointment.**—The State University of New York College of Medicine in Syracuse has appointed the following new faculty members:

As assistant professor of medicine, Dr. Junior A. Abildskov, research consultant at Texas Western College of the University of Texas at El Paso. Dr. Abildskov, secretary of the Vectorcardiography Society, has published widely in the field of cardiology.

As assistant professor of microbiology, Howard H. Shear, Ph.D., formerly research and teaching assistant in the department of bacteriology and immunology, University of Minnesota, Minneapolis; instructor in bacteriology at the University of Rochester School of Medicine and Dentistry, and assistant research virologist, department of pediatrics, University of California at Los Angeles School of Medicine.

As assistant professor of environmental and administrative medicine, Alan Ross, Ph.D., who has been research assistant, department of biostatistics, at the University of Pittsburgh Graduate School of Public Health since 1954.

As instructor in pathology, Dr. Ilga Rullis, who came to Syracuse in April, 1956, as assistant chief of laboratory service, Veterans Administration Hospital.

**Tribute to Foster Kennedy.**—As a memorial to the late Dr. Foster Kennedy, his colleagues and friends are raising a fund for building a canteen at the Bellevue Hospital Center for the accommodation of attending physicians, outpatients, visitors, and volunteers. The ladies of the Social Service Auxiliary are sponsoring this project, any profits from which will go to further the work of the auxiliary in the hospital. It is proposed to erect a plaque in Dr. Kennedy's memory, inscribed: "In Tribute to Foster Kennedy, M.D., F.R.S. (Edin) D.Sc., Director of the 2nd Medical Neurological Division 1919-1949, A great teacher, an eminent clinician and a zestful trusted friend." Contributions may be sent to Social Service Auxiliary to Bellevue Hospital, Room 11, Bellevue Hospital, New York 16.

### New York City

**Dr. Lincoln Relinquishes Two Posts.**—Dr. Edith H. M. Lincoln, chief of the chest clinic of the Children's Medical Service of Bellevue Hospital and professor of clinical pediatrics, New York University College of Medicine, retired from these posts July 1 but will continue to direct a number of research projects from the pediatrics service at Bellevue. She is being succeeded at Bellevue by Dr. Margaret H. D. Smith, formerly of Tulane University School of Medicine, New Orleans, who joined the children's chest service a year ago. Dr. Smith is also connected with the pediatrics department of New York University.

**Clinic for Cerebral Palsied Children.**—An outpatient clinic that will provide both diagnostic and therapeutic services for cerebral palsied children has been opened at the new Metropolitan Hospital, Second Avenue and 97th Street, to be operated by the New York Medical College–Metropolitan Medical Center. Dr. Jerome S. Tobis, director of the department of physical medicine and rehabilitation for the medical center, will be in charge. Dr. Abraham O. Posniak, an instructor in the department, will be chief of the clinic. The outpatient clinic is an extension of inpatient facilities for children with cerebral palsy at the Bird S. Coler Hospital, a division of the center. Evaluations will be held every Tuesday at 9 a. m. Information may be secured by writing or telephoning Miss Harriet Levine, Coordinator of the Cerebral Palsy Clinic, Department of Physical Medicine and Rehabilitation, Metropolitan Hospital, Second Avenue and 97th Street, New York City.

## OHIO

**Medicolegal Institute.**—A two-day institute on "The Head: A Law-Medicine Problem" will be held Sept. 21-22 at the Law-Medicine Center of Western Reserve University, Cleveland. Friday lecture topics will include anatomy of the head; acute head injury—anatomic findings; long-range pathological changes following trauma to the head; clinical evaluation of acute head injury and of remote sequellae of head injury; indications and evaluations of the electroencephalogram; and psychometric testings. Saturday's subjects will be psychiatric evaluation of the post-traumatic syndrome of head injury; eye injury; injury to the auditory apparatus; plastic surgery; and medicolegal problems in head injuries. The September institute will be the second in a series that began early in 1956 with a similar course on the human back. The registration fee will be $25. Complete information on the Institute on the Head, including housing suggestions, is available from Oliver C. Schroeder Jr., Director, Law-Medicine Center, Western Reserve University, Cleveland 6.

**Refresher Course in Aviation Medicine.**—The third Postgraduate Program in Aviation Medicine will be presented at the Health Center, Ohio State University at Columbus, Sept. 10-14, under the joint sponsorship of the Ohio State University College of Medicine and the medical division of the Civil Aeronautics Administration. Designed for physicians interested in the health aspects of flying, it will include presentations on (1) Physical Fitness of Aircrew, (2) Passenger Safety and Comfort, (3) Space Medicine, and (4) Medical Administration (including medical economics of the aviation industry). Field visits to the Medical Research Unit at Wright Air Development Center and to the Medical Research Laboratory, Civil Aeronautics Administration, are scheduled. Invited lecturers will include Dr. Hallowell Davis, St. Louis; Dr. Harold B. Dye, Kansas City, Mo.; Capt. Ashton Graybiel, Pensacola, Fla.; Dr. Hans W. Lawrence, Cincinnati; Ross A. McFarland, Ph.D., Boston; and Major H. O. Parrach and Brig. Gen. Edward J. Tracy of Wright-Patterson Air Force Base, Dayton. The registration fee, $75, includes transportation to Dayton and two dinner meetings. Further information may be obtained from Dr. William F. Ashe, Chairman, Department of Preventive Medicine, Ohio State University Health Center, Columbus 10.

## PENNSYLVANIA

**Kunkel Memorial Award.**—At the second annual Doctor's Day dinner of the Harrisburg Hospital, the annual George B. Kunkel Memorial Award for Advances in Medical Science was inaugurated by the late Dr. Kunkel's son, Lewis S. Kunkel, LL.D., member of the advisory board of the hospital. The George B. Kunkel Memorial Lecture, "The Development of Cardiac Surgery," was presented by Dr. Charles P. Bailey, professor of thoracic surgery, Hahnemann Medical College and Hospital, and director of the Bailey Thoracic Clinic, Philadelphia.

### Philadelphia

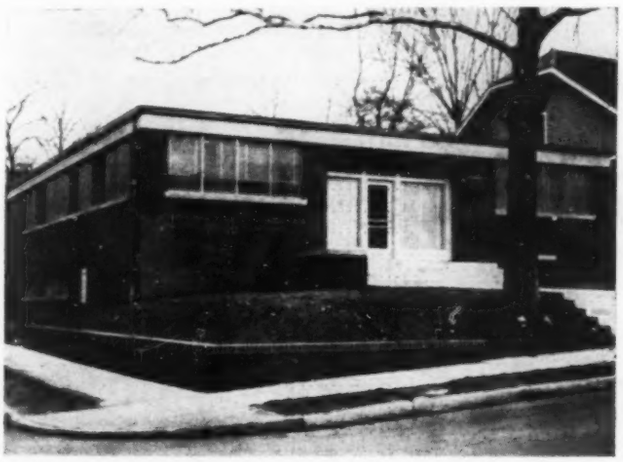
**Institute on Medical Practice.**—The University of Pennsylvania Graduate School of Medicine will present the seventh annual institute, "Current Concepts in Medical and Surgical Practice," Sept. 17-21 at the Penn-Sherwood Hotel, 3900 Chestnut St. All physicians are welcome to attend the institute. Full study course credit (formal) up to a total of 31 hours will be allowed for the week's course by the American Academy of General Practice. On Monday at 8:30 p. m. the ninth Walter Estell Lee Lecture will be presented by Dr. Jonathan E. Rhoads, provost of the University of Pennsylvania, professor of surgery and surgical research, and assistant director of the Harrison department of surgical research at the school of medicine of the University of Pennsylvania. Dr. Rhoads, who serves also as professor of surgery in the Graduate

School of Medicine of the University of Pennsylvania, will speak on "Development of Preventive Surgery in the Field of Cancer." The fees for the full week, including luncheons, are: alumni of the graduate school of medicine, $25; nonalumni, $75; and incoming students, $15. Residents and interns pay no tuition fee.

## TENNESSEE

**University News.**—The following physicians have been appointed assistants on the staff of the University of Tennessee College of Medicine, Memphis: Dr. Paul T. Drenning, division of medicine; Dr. John B. Hamsher, department of urology; Drs. Andrew H. Crenshaw, Lee W. Milford Jr., and Rocco A. Calandruccio, department of orthopedic surgery; Drs. David H. James Jr., Charles Walter Brown, and Chris N. Christu, division of pediatrics. Dr. Christu is from West Memphis, Ark.; all the other appointees are from Memphis.

**State Association Headquarters.**—The Tennessee State Medical Association, which moved its offices from the Doctors Building in downtown Nashville to 112 Louise Ave., shares the new red brick building with the Nashville Academy of Medicine. The building is close to the west side of the Vanderbilt University campus and about a block from St. Thomas Hospital. The offices of the association executive secretary, the academy executive secretary, the



New home of the Tennessee State Medical Association.

association bookkeeper, the public service director, and the secretary for postgraduate education are all located on the main floor, as is the conference room, capable of seating all the members of any single committee. The basement houses files, mimeograph equipment, and bulky supplies. The headquarters building committee consisted of Dr. Daugh W. Smith, chairman; Dr. Charles C. Trabue IV; and Dr. Rudolph H. Kampmeier, all of Nashville.

## WYOMING

**Personal.**—The Brooke Army Medical Center, Fort Sam Houston, Texas, announces that Capt. Spencer Walton, Buffalo, received the Skinner medal for attaining the highest grades of any physician in a basic course for company level career officers at the Army Medical Service School.

**State Medical Election.**—The Wyoming State Medical Society recently elected Dr. Joseph S. Hellewell, Evanston, president; Dr. Harlan B. Anderson, Casper, president-elect; Dr. L. Harmon Wilmoth, Lander, vice-president; Dr. Benjamin Gitlitz, Thermopolis, secretary; and Dr. Carleton D. Anton, Sheridan, treasurer.

**Medical Funds Transferred to Utah.**—In an effort to use some of a federal grant of $300,000 due to be lost to Wyoming for lack of matching funds, $50,000, earmarked for construction of rehabilitation centers, has been transferred to the state of Utah for use in building an addition to St. Mark's Hospital in Salt Lake City. Wyoming patients will be admitted to the hospital on the same basis as Utah citizens. Of the $250,000 remaining, $100,000 earmarked for nursing and convalescent homes, $100,000 for diagnostic and treatment centers, and $50,000 for chronic disease hospitals reverted to the federal government at the end of June, for lack of application and matching funds from Wyoming communities.

## GENERAL

**Tri-State Obstetric-Pediatric Seminar.**—The Florida Medical Association and the Florida State Board of Health announce the sixth annual Tri-State Obstetric-Pediatric Seminar at the Daytona Plaza Hotel, Daytona Beach, Sept. 10-12. Among those who will participate are Dr. Edith L. Potter, University of Chicago School of Medicine; Dr. Clement A. Smith, Harvard Medical School, Boston; Dr. James G. Hughes, University of Tennessee College of Medicine, Memphis; and Dr. Allan C. Barnes, Western Reserve University School of Medicine, Cleveland. The seminar is sponsored by the bureaus of maternal and child health of the Florida, Georgia, and South Carolina state health departments and by the state medical associations of these three states. All physicians are welcome. There is no registration fee.

**Symposium on Antibiotics.**—The Fourth Annual Symposium on Antibiotics, sponsored by the Food and Drug Administration, Division of Antibiotics of the U. S. Department of Health, Education, and Welfare and the journals *Antibiotics and Chemotherapy and Antibiotic Medicine & Clinical Chemotherapy*, will be held Oct. 17-19 at the Willard Hotel, Washington, D. C. The tentative program includes the following topics for panel discussion: (1) Antibiotics in Intestinal Antisepsis, (2) Present Status of Food Preservation with Antibiotics, and (3) Susceptibility of Microorganisms to Antibiotics Isolated From Hospitalized and Nonhospitalized Persons. Abstracts in triplicate (no more than 200 words) may be submitted no later than Sept. 3. The original manuscript and one copy must be submitted by Sept. 17. Manuscripts (original, previously unpublished material, typewritten, double spaced) should be submitted to Henry Welch, Ph.D., Director, Division of Antibiotics, Food and Drug Administration, U. S. Department of Health, Education, and Welfare, Washington 25, D. C.

**First Inter-American Conference on Occupational Medicine.**—The University of Miami School of Medicine, Coral Gables, Fla., and University of Havana (Cuba) School of Medicine will hold the first Inter-American Conference on Occupational Medicine and Toxicology, Sept. 3-7 in Miami, with the University of Miami School of Medicine serving as host. Homer F. Marsh, Ph.D., dean of the school of medicine, will be general chairman. It is expected that the conference will be repeated next year with the University of Havana serving as host. Topics discussed by speakers from Venezuela, Mexico, Peru, Colombia, Chile, Puerto Rico, Cuba, the United States, and other countries will include "Establishment of a Medical Department in Industry," "Work and Fatigue in Industry," "Effects of Environmental Conditions on the Health of the Occupational Worker," "Recording of Medical Case Histories," "Control of Malaria in Endemic Areas," "Occupation and Heart Disease," "The Role of the Anesthesiologist in Acute Poisonings," "Neurological Problems in Occupational Medicine and Toxicology," "The Treatment of Intoxications by Organic Phosphates," "Management of Berylliosis," and "Treatment of Manganese Intoxication."

**Campaign to Reduce Accidental Falls.**—On Sept. 1 the National Safety Council will launch a nationwide campaign against accidental falls, which are second to motor vehicle accidents in number of fatalities. In 1955, 19,800 persons in the United States (55 a day) were killed by falls. In the nation's industrial operations alone, more than 450,000 workers are temporarily or permanently disabled annually by falls. The goal of the campaign is a 50% reduction in injuries and deaths due to falls. The council will make available posters, banners, films, flip charts, illustrated booklets, five-minute safety talks, and safety instruction cards on falls to companies and governmental agencies. A certificate of achievement will be awarded to each plant achieving the goal of a 50% reduction in falls or having no chargeable injuries from falls during the campaign year. Companies enrolling in the campaign must provide injury experience from falls covering 1955 and 1956 to the nearest convenient date. A special feature of the campaign will be a certificate of commendation to supervisors who attain the campaign goal. For a copy of the booklet "Falls Aren't Funny" and a brochure listing the campaign materials available, write the National Safety Council, 425 N. Michigan Ave., Chicago 11.

**Hematologists Meet in Boston.**—The sixth congress of the International Society of Blood Transfusion (Dr. Isidor S. Ravdin, Philadelphia, president) and the ninth annual meeting of the

American Association of Blood Banks (Dr. James J. Griffitts, Miami, Fla., president) will take place at the Hotel Somerset in Boston, Sept. 3-5, immediately following the sixth congress of the International Society of Hematology under the presidency of Dr. William Dameshek to be held during the week of Aug. 26 (THE JOURNAL, Nov. 26, 1955, page 1314; June 9, 1956, page 544). Joint sessions of the two congresses will feature immunohematology: "autoimmunohematology" on Sept. 1 and "isoimmunohematology" on Sept. 3. The tentative agenda for the meeting of the blood transfusion congress and the association of blood banks includes clinical problems (transfusion reactions and massive transfusions); preparation and preservation of blood; plasma and plasma derivatives; isoimmunohematology; hepatitis; immunochemistry; and isoantibodies. The American Association of Blood Banks has arranged the following luncheon panel meetings: Improvements in Blood Preservation; The Rarer Antibodies, Their Detection, Identification and Significance in Blood Transfusion; The Survival of Transfused Cells in Relation to Disease States; The Problems of Blood Transfusion in Pediatrics; The Preparation and Use of Fractions of Human Plasma; and Organization of Blood Transfusion Services.

**Meeting of Obstetricians and Gynecologists.**—The American Association of Obstetricians and Gynecologists will hold its 67th annual meeting at the Homestead, Hot Springs, Va., Sept. 6-8, under the presidency of Dr. Lawrence M. Randall, Rochester, Minn. Presentations by invitation will include:

Urethrovesicopubic Relations in the Female. Effects of Coitus, Parturition, Menopause, and Uterine Suspension, C. Paul Hodgkinson, Detroit.
Utility of the Mid-Forceps Operation—A Review of 1,000 Consecutive Procedures, Robert A. Cosgrove, Jersey City, N. J.
Correlation of Urinary Steroid Metabolites, Uterine Motility, and Obstetrical Pathology, Paul D. Bruns, Denver.
Evaluation of the Basal Cell in Radiosensitivity Studies of Carcinoma of the Cervix, Charles J. Smith, Chicago.
Evaluation of Supervoltage Irradiation Therapy in Treatment of Pelvic Malignancy, George A. Hahn, Philadelphia.

The Thursday afternoon session will close with "Studies on Lactic Acid Metabolism in Pregnancy and Labor" by Dr. Charles H. Hendricks, Western Reserve University School of Medicine, Cleveland, the prize thesis of the American Association of Obstetricians and Gynecologists Foundation, Inc., which will hold its meeting Thursday at 2:30 p. m. The Joseph Price Oration by Prof. Pierre H. deWatteville, Geneva, Switzerland, will be delivered at 8:45 p. m. Thursday. The president's address is scheduled for 12 noon Friday and the banquet for 7:30 p. m. that day.

**Surgeons Meet in Chicago.**—The 10th biennial Congress of the International College of Surgeons, combined with the 21st annual Congress of the United States and Canadian sections, will convene at the Palmer House in Chicago Sept. 9-13. The Acuff Memorial Lecture for the year will be given by Dr. Alexander Brunschwig, New York, who will speak on pelvic surgery. Prof. Felix Mandl, Vienna, Austria, secretary of the Austrian section, a pioneer in surgery of the parathyroid, will deliver a report on his technique. Other foreign speakers will include:

Rudolph Nissen, Basel, Switzerland, president of the International College of Surgeons.
Carlos Gama, São Paulo, Brazil, president-elect of the International College of Surgeons.
Raymond Darget, Bordeaux, France, secretary of the French section.
Leopold Lambert, Liege, Belgium, president of the Belgian section.
Andre Nicolet, president of the Swiss section.
Jorge A. Taiana, Buenos Aires, Argentina, secretary of the Argentinian section.
Tassilo Antoine, dean of the Medical Faculty, University of Vienna.
Lucien Leger, University of Paris, France.
Edmond Velter, director of the department of ophthalmology, University of Paris.
Clovis Salgado, minister of health, São Paulo, Brazil.
Pedro A. Gutierrez Alfaro, minister of health, Caracas, Venezuela.
Albert Jentzer, professor emeritus and head of the department of surgery, University of Geneva, Switzerland.

The annual banquet will be held Wednesday night. The congress will close Thursday evening with the annual convocation in the Civic Opera House, at which Dr. David B. Allman, Atlantic City, N. J., President-Elect of the American Medical Association, will be the speaker. Dr. Allman's subject will be "The Role of the American Medical Association in International Health." Open house will be held during the congress at the International Surgeons Hall of Fame and the School for History of Surgery and Related Sciences, 1516 Lake Shore Dr.

**Prevalence of Poliomyelitis.**—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States and its territories and possessions in the weeks ended as indicated:

| Area | July 28, 1956: Paralytic Type | July 28, 1956: Total Cases Reported | July 30, 1955, Total |
|---|---|---|---|
| New England States | | | |
| Maine | .. | .. | 2 |
| New Hampshire | .. | .. | 16 |
| Vermont | 2 | 3 | 4 |
| Massachusetts | 2 | 7 | 204 |
| Rhode Island | .. | .. | 8 |
| Connecticut | 2 | 3 | 29 |
| Middle Atlantic States | | | |
| New York | 8 | 23 | 65 |
| New Jersey | 3 | 7 | 11 |
| Pennsylvania | .. | 4 | 27 |
| East North Central States | | | |
| Ohio | 3 | 24 | 38 |
| Indiana | 4 | 20 | 20 |
| Illinois | 76 | 158 | 54 |
| Michigan | 6 | 15 | 50 |
| Wisconsin | 2 | 8 | 56 |
| West North Central States | | | |
| Minnesota | 1 | 8 | 24 |
| Iowa | 3 | 19 | 27 |
| Missouri | 5 | 17 | 6 |
| North Dakota | .. | .. | 3 |
| South Dakota | .. | 1 | 1 |
| Nebraska | .. | 1 | 19 |
| Kansas | 2 | 7 | 12 |
| South Atlantic States | | | |
| Delaware | .. | .. | 2 |
| Maryland | 1 | 2 | 9 |
| District of Columbia | .. | .. | .. |
| Virginia | 4 | 7 | 21 |
| West Virginia | 2 | 4 | 4 |
| North Carolina | 11 | 20 | 21 |
| South Carolina | 1 | 4 | 8 |
| Georgia | 7 | 13 | 5 |
| Florida | 6 | 12 | 11 |
| East South Central States | | | |
| Kentucky | 3 | 10 | 17 |
| Tennessee | 2 | 2 | 13 |
| Alabama | .. | 8 | 8 |
| Mississippi | 7 | 11 | 8 |
| West South Central States | | | |
| Arkansas | 6 | 9 | 11 |
| Louisiana | 16 | 20 | 9 |
| Oklahoma | 10 | 18 | 27 |
| Texas | 34 | 63 | 71 |
| Mountain States | | | |
| Montana | .. | 3 | 1 |
| Idaho | 3 | 7 | 7 |
| Wyoming | .. | .. | 3 |
| Colorado | 1 | 1 | 9 |
| New Mexico | .. | 1 | 4 |
| Arizona | 4 | 6 | 2 |
| Utah | .. | 22 | .. |
| Nevada | 1 | 2 | 1 |
| Pacific States | | | |
| Washington | 5 | 10 | 12 |
| Oregon | 2 | 4 | 17 |
| California | 43 | 74 | 57 |
| Territories and Possessions | | | |
| Alaska | 1 | 1 | 2 |
| Hawaii | .. | .. | 3 |
| Puerto Rico | 4 | 4 | 5 |
| Total | 293 | 663 | 1,044 |

**Congress of Physical Medicine.**—The American Congress of Physical Medicine and Rehabilitation will hold its 34th annual scientific and clinical session Sept. 10-14 in Atlantic City, N. J., under the presidency of Dr. Gordon M. Martin, Rochester, Minn. At the opening of the annual session Tuesday, 2 p. m., addresses of welcome will be delivered by Mayor Joseph Altman and Dr. David B. Allman, Atlantic City, N. J., President-Elect, American Medical Association. The presidential address, "Expanding Our Educational Goals," will precede "Rehabilitation of the Upper Extremity Amputee," an invitational address by Dr. Henry H. Kessler, West Orange, N. J. Wednesday morning there will be a panel discussion, "The Chronically Ill and Aging—Whose Responsibility?" Wednesday at 2 p. m. the sixth John Stanley Coulter Memorial Lecture, "Some Problems of Communication

in Medicine, as Illustrated by the Coulter Bibliography," will be presented by Dr. Frederic T. Jung, Chicago, an assistant editor of THE JOURNAL of the American Medical Association. A panel discussion on ethical practices is scheduled for Thursday morning. Friday at 10:15 a. m. "Protean Symptomatology Caused by Nasal Sinusitis Showing Minor X-Ray Changes" will be discussed by W. Gordon Rich, M.B., D.M.R.E. (Cambridge) (by invitation), radiologist, St. George's Hospital, Christchurch, New Zealand. Sixty-six other persons will participate by invitation in the sessions. The American Academy of Physical Medicine and Rehabilitation (Dr. Ben L. Boynton, Chicago, president) has scheduled its meeting for Monday. The scientific session will open with a symposium, "Rheumatic Diseases of the Joints and Non-Articular Structures," which will be moderated, by invitation, by Dr. Harvey N. Vandegrift, Atlantic City, and in which the first paper will be an invitational presentation, "Clinical Symptomatology of the Various Rheumatic Diseases" by Dr. James Sydney Stillman, chief, medical services, Robert B. Brigham Hospital, Boston. The meeting will close Monday at 3:30 p. m. with an invited report of preconvention meetings of the American Association of Electromyography and Electrodiagnosis by its president, Dr. Paul A. Shea, San Diego, Calif. The annual dinner of the congress and the academy will be held Wednesday at 7 p. m. (dress optional). Exhibitors and guests are welcome.

### HAWAII

**Hospital Superintendent Needed.**—The department of civil service, Territory of Hawaii (825 Mililani St., Honolulu 13, T. H.), is seeking a superintendent for a Hansen's disease hospital. Salary is $10,000 with full perquisites, including a home, domestic service, and food (no children under 16). Employment is through submittal of official application forms and an unassembled examination (rating of training and experience). The hospital is located at the Hansen's Disease Settlement at Kalaupapa on the island of Molokai, about 30 miles from the island of Oahu, where Honolulu is located. The settlement is virtually inaccessible except by air. Features of this assignment are said to include recreational facilities at the settlement, pleasant year-round climate, and extremely fine fishing. The position is under civil service and carries vacation benefits, sick leave provisions, and a retirement program. Applicant must have four years of experience as a physician, of which two years shall have been in an administrative capacity in a hospital, a medical institution providing domiciliary care, or a comparable health agency or program. A license to practice medicine in the Territory of Hawaii is required for this position. Interested persons should write to the department for application forms and further information.

### FOREIGN

**Rehabilitation in Leprosy.**—Under the sponsorship of the Sovereign Military Order of Malta, the International Congress for the Defence and Social Rehabilitation of the "Leper" was held in Rome April 16-18. Among the topics discussed were the activity of the World Health Organization in the field of leprosy, recent progress in the therapy of leprosy, new trends of the social organization of leprosy control services, prophylaxis and protection of the child, and social, occupational, and surgical rehabilitation. The 250 delegates from 51 nations adopted resolutions calling for the abolition of discriminatory laws; a propaganda program for the promotion of public understanding of the true nature of leprosy and removal of all prejudices and superstitions associated with the disease in countries where the latter is a problem; adoption of measures for early discovery and treatment of cases; limitation of hospitalization to those whose condition requires special medical and/or surgical treatment and termination on completion of treatment; protection of children from the infection by every approved biological means, with removal to a preventorium only in cases of absolute necessity; and encouragement of governments to grant the moral, social, and medical assistance necessary for the protection and rehabilitation of the seriously disabled through the agency of various governmental departments, such as social welfare, agriculture, and education.

### DEATHS IN OTHER COUNTRIES

Sir **Morton Smart**, G.C.V.O., D.S.O., M.D., died at his home at Cooden Beach, England, March 16, aged 78. Dr. Smart was appointed manipulative surgeon to Edward VIII in 1936, and in 1949 extramanipulative surgeon to George VI, an office continued under the present Queen. His first hospital appointment was as medical officer in charge of the electrical department at the Hospital for Sick Children, Great Ormond Street. One of his earliest papers, on the x-ray diagnosis of renal calculus, was published in 1905. The first World War interrupted the preparations he was making to write a book, and it was not until 1933 that his "Principles of Treatment of Muscles and Joints by Graduated Muscular Contractions" was published. Dr. Smart was consultant to the London Clinic for Injuries, Grosvenor Square, and during and after World War II was consultant in physical medicine to the Royal Air Force. He wrote on manipulative surgery in the Medical Annual, 1936, and was a contributor to many professional journals. From 1943 to 1949 he was a member of the physical medicine group committee of the British Medical Association and a member of the central medical war committee. For many years he attended members of the royal family, including the Prince of Wales (later Edward VIII) and the Duke of York (later George VI). As far back as 1931 he had been decorated for his services to the Spanish court, and he was also a Chevalier of the Order of St. Charles of Monaco.

### CORRECTION

**Ringworm.**—The Foreign Letter entitled "Ringworm" (THE JOURNAL, July 21, page 1180) contains the statement "Man is susceptible to all the ringworm fungi that commonly attack animals, with the exception of Microsporum audouini and M. gypseum." What was meant was that all ringworms that attack man or animals attack both, except M. audouini, which attacks only man, and M. gypseum, which attacks only animals.

## EXAMINATIONS AND LICENSURE

### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Various Centers. September 4-5 (Part I). Candidates may file applications at any time but they must be received at least six weeks before the date of the examination for which application is made. New candidates should apply by formal registration, registered candidates may notify the board indicating desired location, date and candidate number. Ex. Sec., Dr. John P. Hubbard, 133 South 36th St., Philadelphia 4.

### BOARDS OF MEDICAL EXAMINERS

ILLINOIS: *Examination and Reciprocity.* Chicago, Oct. 9-11. Supt. of Regis., Mr. Frederic B. Selcke, Capitol Building, Springfield.

LOUISIANA: *Homeopathic.* Subject to call. Sec., Dr. F. H. Hardenstein, 903 Pere Marquette Bldg., New Orleans 12.

MONTANA: *Examination and Reciprocity.* Helena, Oct. 2-3. Sec., Dr. S. A. Cooney, 7 West 6th Ave., Helena.

NEW HAMPSHIRE: *Examination and Reciprocity.* Concord, Sept. 12-13. Sec., Dr. John S. Wheeler, 107 State House, Concord.

OHIO: *Endorsement.* Columbus, Aug. 28 and Oct. 2. *Examination.* Columbus, Dec. 18-20. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus 15.

TEXAS:* *Examination and Reciprocity.* Fort Worth, Dec. 6-8. Applications for examination must be on file at least ten days prior to the meeting date and applications for reciprocity must be complete and on file at least thirty days prior to the meeting date. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

WEST VIRGINIA: *Reciprocity.* Charleston, July 20. Sec., Dr. N. H. Dyer, State Office Bldg. No. 3, Charleston.

ALASKA:* On application in Anchorage, Fairbanks, Juneau and other towns. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

DISTRICT OF COLUMBIA: *Examination.* Washington, Oct. 22-23. Deputy Director, Mr. Paul Foley, 1740 Massachusetts Ave., N.W., Washington.

OKLAHOMA: *Examination and Reciprocity.* Oklahoma City, Sept. 28-29. Sec., Dr. E. F. Lester, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination.* Portland, Sept. 8 and Dec. 1. Dr. Earl M. Pallett, Sec., State Board of Higher Education, Eugene.

RHODE ISLAND: *Examination.* Providence, Aug. 29. Administrator of Professional Regulation. Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

TEXAS: *Examination.* Austin, October. Sec., Bro. Raphael Wilson, 407 Perry-Brooks Bldg., Austin.

WISCONSIN: *Examination.* Madison, Sept. 21. Milwaukee, Dec. 1. Final date for filing application is Sept. 13. Sec., Dr. W. H. Barber, 621 Ransom St., Ripon.

ALASKA: *Examination and Reciprocity.* Anchorage and Juneau, first week of February, April, June, August and November. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

*Basic Science Certificate required.

# GOVERNMENT SERVICES

## AIR FORCE

**Appoint Research Advisor.**—Dr. Frank W. Hartman has been appointed medical research advisor to the surgeon general of the U. S. Air Force. Dr. Hartman was director of laboratories at the Henry Ford Hospital in Detroit from 1922 to 1925. During World War I, Dr. Hartman served with the U. S. Navy Medical Corps. He was the first president and one of the founders of the College of American Pathologists. He is a past-president of the American Society of Clinical Pathology, the Detroit Academy of Medicine, and the Detroit Medical Club. He is chairman of the board of trustees of the Detroit Institute of Cancer Research and on the board of trustees of the Michigan Cancer Foundation. From 1948 to 1950, Dr. Hartman was a member of the committee of blood and blood derivatives of the National Research Council and from 1948 to 1952 a member of the pathology study section of the National Institutes of Health. Since 1952, he has been an honorary civilian consultant to the surgeon general of the Navy.

## ARMY

**Board Diplomates in Army Medical Service.**—Each June and December the Surgeon General's Office reviews the number of medical and allied science officers on active duty who have attained certification by one of the American medical specialty boards. The June, 1956, figures total 741 board diplomates in the Army Medical Service in nearly 40 different specialties, including clinical chemistry, clinical or industrial or personnel psychology, nutrition, and x-ray and radium physics certification held by Medical Service Corps officers. Internal medicine is the most popular medical specialty in the Army, with surgery as a close second, according to the results of the most recent semiannual survey announced by Col. Joseph H. McNinch, chief of the personnel division in the Office of the Surgeon General. When its graduate professional training program was instituted in 1947, the Army Medical Service had only 83 specialists, plus 44 non-Regulars certified by the American boards, making a total of 127 diplomates. The number of medical careerists (Regular Army) with specialty diplomas has always been larger than the non-Regulars. Certification by a specialty board is one of the objectives of the educational activities conducted in the Army's teaching hospitals.

## VETERANS ADMINISTRATION

**Personal.**—Dr. George M. Leiby, director of professional services at the Veterans Administration hospital in New York City, has been appointed manager of the VA research hospital in Chicago, succeeding Dr. Michael L. Matte, who has been reassigned to the VA hospital in Los Angeles at his own request. Dr. Leiby has been certified by the American Board of Internal Medicine and by the American Board of Public Health and Preventive Medicine.

## PUBLIC HEALTH SERVICE

**Grants for Research in Hospital Service.**—Grants for research in hospital service and administration totaling $367,182 have been approved by the Federal Hospital Council, the U. S. Public Health Service has announced. This research, aimed at finding ways to improve the care of patients in hospitals, reduce costs, and help make the benefits of hospital and health services more widely available, is carried on as part of the Hospital Survey and Construction (Hill-Burton) Program. Congress has appropriated $1,200,000 for the research phase of the program in the 1957 fiscal year.

The grants were made to the University of North Carolina School of Medicine, Chapel Hill; University of Tennessee College of Medicine, Memphis; University of Michigan, Ann Arbor; St. Louis University, St. Louis; Columbia University School of Public Health and Administrative Medicine, New York; Council of Jewish Federations and Welfare Funds, New York; Minnesota Department of Health, Minneapolis; and American College of Physicians, Philadelphia.

**Study of Cancer in Africa.**—The committee on geographical pathology, research commission, International Union Against Cancer, has planned three meetings to study cancer in Africa. The first is the Symposium on Cancer of the Liver to be held Aug. 24-31, 1956, in Kampala, Uganda, East Africa. The tentative program includes (1) Definition of Terms Cirrhosis, Necrosis, Fatty Change, Kwashiorkor, and Primary Cancer of the Liver; (2) Experimental Necrosis, Regeneration and Fibrosis of Liver; (3) World Distribution, Kwashiorkor, Infectious Hepatitis, Cirrhosis and Cancer of the Liver; (4) Pathology of Kwashiorkor, Cirrhosis, Cancer of Liver and Experimental Cancer of Liver; (5) Mechanism of Chemical Carcinogenesis of the Liver of the Rat; (6) Clinical Aspects, Diagnosis, and Therapy of Kwashiorkor, Cirrhosis, Cancer of the Liver, Endocrinological Aspects of Liver Disease; (7) Liver Function Tests and Alteration in Metabolism in Patients with Cirrhosis; (8) Nutritional and Physiological Aspects of Liver Disease; (9) Enzyme Activity of Rat Liver During Carcinogenesis; and (10) Enzyme Activity of Hepatic Tissue in Kwashiorkor.

This symposium in Kampala should afford the opportunity for scientists from different parts of the world to meet, to examine each other's material, and have an exchange of ideas with the view of improving the knowledge of liver disease and cancer in Africa and of stimulating new studies along these lines. About 27 participants, representing 10 countries, were expected. This meeting is being generously supported by the British Empire Cancer Campaign, the Medical Research Council and the Colonial Office, and by the cancer organizations in the countries from which the delegates are coming.

Immediately following the meeting in Kampala, most of the participants will continue on to a meeting arranged for Sept. 1-5, 1956, in Leopoldville, Belgian Congo. This meeting is being supported by the Louvanian University, Leopoldville, and the Belgian government. The meeting in Leopoldville will be on a broader scale than that of Kampala and will consider not only all forms of cancer in Africa, but all forms of cancer in relation to other diseases, geography, and race. There will be specialized presentations on the geography of Africa south of the Sahara Desert. There will be a special presentation regarding the characteristics of the different ethnic groups that inhabit this area. Cancer in the African Negro will be discussed in relation to cancer in other races. Nutrition, avitaminosis, siderosis of the liver, peptic ulcer, and parasites will be discussed in relation to cancer and to other diseases. A central repository for pathological specimens from Africa will be considered. A large part of the program will be devoted to consideration of methods for the collection of statistical data within stated geographical limits. Time will be set aside to consider what problems for research can be recommended for study in Africa.

Following the meeting in Leopoldville, several of the participants will go on to Dakar, French West Africa, to accept the invitation of the high commissioner of the government of the French Republic in West Africa to study the types of cancer and related diseases that may be observed in the hospitals of Dakar. Those accepting the invitation, about 12 individuals, will be guests of the governor general. The meetings will include visits to the Native Central Hospital and to the Principal Hospital and inspection of the Institut Pasteur. A side trip to the Nutritional Study Center, a little distance from Dakar, will allow the group to observe the work in progress there. The main meetings will be held at the medical school in Dakar.

# DEATHS

**Rennie, Thomas Alexander Cumming** ✦ New York City; born in Motherwell, Scotland, Feb. 28, 1904; Harvard Medical School, Boston, 1928; interned at the Peter Bent Brigham Hospital in Boston; at one time taught at the University of Michigan Medical School, Ann Arbor, and the Johns Hopkins University School of Medicine in Baltimore; associate professor of psychiatry at Cornell University Medical College from 1941 to 1950, when he became professor of psychiatry (social psychiatry); chairman of the New York City Community Mental Health Board; served as vice-president of the board of directors of the National Association for Mental Health, trustee of the American Foundation for Mental Health, and a member of the Mellon Advisory Committee at Vassar College, Poughkeepsie, N. Y., of the National Mental Health Committee, and of the Social Science Research Council; fellow of the American Psychiatric Association and the New York Academy of Medicine; member of the New York Society for Clinical Psychiatry, American Psychosomatic Society, American Psychopathological Association, and the American Association for the Advancement of Science; certified by the National Board of Medical Examiners; from 1937 to 1941 visiting psychiatrist at the Baltimore City Hospital; consultant in psychiatry at the Veterans Administration Hospital (Franklin Delano Roosevelt) in Montrose, N. Y.; attending psychiatrist at the New York Hospital; associate editor, *Psychosomatic Medicine;* contributing editor to the *International Journal of Group Psychotherapy* and co-editor of the *International Journal of Social Psychiatry;* co-author of "Mental Health in Modern Society," "Vocational Rehabilitation of Psychiatric Patients," and "Vocational Services for Psychiatric Clinic Patients"; died in the New York Hospital May 21, aged 52, of cerebral hemorrhage.

**Russum, Benjamin Carl** ✦ Omaha; born in Topeka, Kan., Jan. 6, 1892; John A. Creighton Medical College, Omaha, 1916; joined the faculty of his alma mater, now known as the Creighton University School of Medicine, in 1922 as an instructor, later became professor of pathology and bacteriology, and since 1947 professor of pathology and head of the department; specialist certified by the American Board of Pathology; fellow of the College of American Pathologists and the American Society of Clinical Pathologists, of which he was a charter member; member of the American Public Health Association, the International Association of Medical Museums, and the American Association for the Advancement of Science; president of the Physicians Health Association; past-president of the Omaha-Midwest Clinical Society and the Nebraska Association of Pathologists; veteran of World War I; director of laboratories, St. Joseph's Hospital; on the staffs of St. Catherine's and Douglas County hospitals; pathologist for the Union Pacific Railroad; formerly editor of the *Journal of the Omaha-Midwest Clinical Society;* died May 25, aged 64, of coronary thrombosis.

**Heiner, Robert Graham** ✦ Captain, U. S. Navy, retired, Washington, D. C.; born in Fort Randall, S. D., Jan. 6, 1877; University of Virginia Department of Medicine, Charlottesville, 1900; entered the naval service and was appointed assistant surgeon on Jan. 15, 1904; served with the Navy medical department throughout the United States and abroad; during World War I was commended for services aboard the USS Mount Vernon and as medical aide and liaison officer to a patrol force evacuating Army wounded from Army Base no. 8, St. Nazaire, France; served with distinction as medical officer to the Legation Guard at Peiping, China, from 1930 to 1933; decorations consisted of World War I Victory medal with "Overseas" clasp, Second Nicaraguan Campaign medal, Yangtze Service medal, American Campaign medal, World War II Victory medal, and Medal of Merit with Silver Star (Nicaragua); after completing more than 35 years of service, retired from the Navy on Sept. 1, 1939; recalled to active duty and served as medical officer in the Fifth Naval District from 1943 to 1945; fellow of the American College of Surgeons; died in the U. S. Naval Hospital, Bethesda, Md., June 7, aged 79, of pulmonary embolus and bronchogenic carcinoma.

✦ Indicates Member of the American Medical Association.

**Reynolds, Frederick P.** ✦ Colonel, U. S. Army, retired, Santa Barbara, Calif.; born in Elmira, N. Y., Aug. 10, 1867; University of Pennsylvania Department of Medicine, Philadelphia, 1890; commissioned in the regular Army May 26, 1892; rose through the various grades to that of colonel May 15, 1917; retired Nov. 15, 1923, after 30 years' service; veteran of the Spanish-American War; served on the Mexican Border in 1916; was with the American Expeditionary Force in France, first in the chief surgeon's office and then for a year as chief surgeon of the advanced sector; for his service in World War I received the Distinguished Service medal and was named by France as an officer of the Legion d' Honneur and as an officer of the Legion d' Honneur des Epidemies; also held five campaign service medals; later appointed professor of military hygiene at the U. S. Military Academy; as executive secretary of the committee of medical education of the New York Academy of Medicine, was instrumental in organizing the "Graduate Fortnight"; died in St. Francis Hospital May 18, aged 88, of arteriosclerosis with nephrosclerosis.

**Kagy, Edwin Stewart** ✦ New Orleans; born in Alma, Ark., Jan. 30, 1909; Tulane University School of Medicine, New Orleans, 1934; interned at Charity Hospital of Louisiana; commissioned in the regular Medical Corps of the Army in August, 1935, and was ordered to the Philippines in the fall of 1940; was at Corregidor when Bataan fell and was taken prisoner; in the fall of 1943 was transferred from the Philippines to Tokyo; awarded the Bronze Star medal by direction of the President for outstanding courage and medical ability in protecting the health and lives of fellow prisoners while serving as surgeon and physician at the Omori, Shinagawa, Niigata, and Tokyo 3D prison camps in Japan from September, 1943, to August, 1945; also awarded the Purple Heart medal and two Oak Leaf Clusters; served on the faculty of Louisiana State University School of Medicine; on the staff of Southern Baptist Hospital; died May 28, aged 47, of bronchopneumonia.

**Jackson, George Henry, Jr.** ✦ Evanston, Ill.; born at Natick, Mass., Aug. 17, 1890; Harvard Medical School, Boston, 1918; interned at the Hartford (Conn.) Hospital, Children's Hospital in Boston, the Massachusetts General Hospital, and the Infants' Hospital in Boston; volunteer assistant in pathology at the Peter Bent Brigham Hospital in Boston for two months; formerly practiced in Chicago, where he was a resident surgeon at the Children's Memorial Hospital, a fellow in orthopedics at the S. A. Sprague Memorial Institute, University of Chicago, assistant professor of surgery at Rush Medical College, and on the staff of the Presbyterian Hospital; entered the Mayo Foundation in Rochester, Minn., on Sept. 21, 1921, and left June 1, 1923; member of the American Association for the Advancement of Science and the Oxford Bibliographical Society, Oxford, England; died April 11, aged 65, of a heart attack.

**Sputh, Carl Brosius, Sr.** ✦ Indianapolis; born in Indianapolis in 1884; Indiana University School of Medicine, Indianapolis, 1912; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the International College of Surgeons and the American College of Surgeons; specialist certified by the American Board of Otolaryngology; from 1934 to 1941 president of the Normal College of American Gymnastic Union (now part of Indiana University); from 1913 to 1916 health and physical director at La Crosse (Wis.) State Teachers College; for many years on the consulting staffs of Methodist, St. Vincent's, and Indianapolis General hospitals, and St. Francis Hospital in Beech Grove, Ind.; in 1941 awarded an honorary master of science degree from Indiana University, where he served as a faculty member of the medical school; died April 8, aged 71.

**McGaughey, James David** ✦ Wallingford, Conn.; Jefferson Medical College of Philadelphia, 1910; medical examiner for the town of Wallingford; member of the American Academy of General Practice; past-president and vice-president of the New Haven County Medical Society; served overseas during World War I and with the Connecticut State Guard during World War II;

school physician to the Choate School; member of the board of directors and senior attending physician at the Meriden (Conn.) Hospital; died in the Gaylord Farm Sanatorium April 18, aged 73, of arteriosclerotic cardiovascular renal disease and pulmonary infarction.

**O'Shea, William Michael** ✠ Seattle; born in Salem, Mass., Sept. 1, 1887; Harvard Medical School, Boston, 1912; past-president of the King County Medical Society; member of the Puget Sound Surgical Society and Pacific Coast Obstetrical and Gynecological Society; fellow of the American College of Surgeons; for many years member of the state board of medical examiners; veteran of World War I; in September, 1950, the Dr. William M. O'Shea Children's Orthopedic Guild was named in his honor; on the staffs of the Providence, Virginia Mason, Swedish, and King County hospitals; died May 3, aged 68, of cerebral hemorrhage.

**Stewart, Henry,** Gettysburg, Pa.; born Oct. 27, 1868; University of Pennsylvania Department of Medicine, Philadelphia, 1892; specialist certified by the American Board of Pathology; member of the College of American Pathologists; past-president and for many years secretary of the Adams County Medical Society; served twice as county coroner; for more than a decade, secretary of the city board of health; from 1906 to 1935 first registrar of vital statistics for Gettysburg; an associate member of the American Medical Association; for many years on the staff of the Annie M. Warner Hospital; died March 22, aged 87.

**Miller, Robert Horace** ✠ Nashville, Tenn.; College of Physicians and Surgeons, Memphis, 1911; for many years member of the Tennessee Anatomical Board; visiting professor of anatomy at the Meharry Medical College; formerly associate professor of anatomy and assistant dean at the University of Tennessee College of Medicine in Memphis; at one time taught at the University of Missouri in Columbia and Creighton University in Omaha; served on the staff of the Memphis (Tenn.) General Hospital; author of "Applied Anatomy: Functional and Topographical"; died April 27, aged 77, of coronary occlusion.

**Andrews, Benjamin Franklin** ✠ Evanston, Ill.; College of Physicians and Surgeons of Chicago, 1894; specialist certified by the American Board of Otolaryngology; at one time a medical missionary in Mexico; died in the Evanston Hospital June 13, aged 92, of pneumonia and multiple infarcts of kidney.

**Braun, Jerome** ✠ Commander, U. S. Navy, retired, Dallas, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1910; served during World War I; entered the U. S. Navy on Jan. 3, 1921; retired Feb. 1, 1936; died May 14, aged 75, of cerebral hemorrhage.

**Brooks, William Henry** ✠ Monticello, Utah; Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C., 1947; interned at the North Carolina Baptist Hospital in Winston-Salem, N. C., and the U. S. Marine Hospital in Norfolk, Va.; retired from the U. S. Public Health Service May 3, 1950; on the staff of the San Juan County Hospital, where he died May 4, aged 39, of acute myocardial infarction.

**Brown, Samuel Elkan** ✠ Colonel, U. S. Air Force, retired, San Antonio, Texas; University of Virginia Department of Medicine, Charlottesville, 1905; served during World War I; entered the regular Army in 1920; transferred to the U. S. Air Force and was retired May 31, 1946; much of his military service was with the Air Corps section of the Army, and considerable time was spent at California stations, particularly March Field; died in the Brooke Army Hospital recently, aged 73, of arteriosclerotic heart disease and pulmonary emphysema.

**Carter, Henry Rose, Jr.** ✠ Birmingham, Ala.; University of Pennsylvania Department of Medicine, Philadelphia, 1908; specialist certified by the American Board of Internal Medicine; served on the staffs of the Jefferson-Hillman University Hospital, Children's Hospital, St. Vincent's Hospital, and the Birmingham Baptist Hospital; died at his summer home in Guntersville April 16, aged 73, of cerebral thrombosis.

**Frick, Adelaide Howard Childs,** New York City; Yale University School of Medicine, New Haven, Conn., 1943; member of the Medical Society of the State of New York; certified by the National Board of Medical Examiners; specialist certified by the American Board of Pediatrics; on the staff of the New York Hospital; died in the Presbyterian Hospital March 30, aged 41, of adenocarcinoma of the colon.

**Harmison, Frank B.** ✠ Chicago; Rush Medical College, Chicago, 1896; retired in 1953 after 25 years as a physician in the contagious disease section of the city health department; died June 10, aged 86, of coronary thrombosis.

**Heraty, James Edmund** ✠ La Crosse, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1901; veteran of World War I; past-president and secretary of the La Crosse County Medical Society; on the staffs of St. Francis and La Crosse hospitals; died April 23, aged 81, of bronchopneumonia and bronchiectasis.

**Hewitt, John Everett,** Wakefield, Kan.; University Medical College of Kansas City, Mo., 1899; served during World War I; formerly an officer in the regular Army; died in the U. S. Army Hospital, Fort Riley, May 1, aged 80, of cirrhosis of the liver.

**Hines, Kenneth Arden** ✠ Meadville, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1927; member of the Industrial Medical Association; on the staff of the Meadville City Hospital; died May 10, aged 57, of coronary occlusion.

**Hottinger, Erwin Stauer,** Chicago; Northwestern University Medical School, Chicago, 1906; veteran of World War I; died in the Veterans Administration Hospital, Hines, May 31, aged 72, of a bleeding ulcer.

**Hughes, Leonidas** ✠ Faubush, Ky.; Barnes Medical College, St. Louis, 1899; died May 11, aged 80, of cerebral hemorrhage.

**Hull, Henry Clay** ✠ Washington, Iowa; Northwestern University Medical School, Chicago, 1898; served during World War I; died April 21, aged 81, of congestive heart disease.

**Jacks, Oscar** ✠ Jersey City, N. J.; University and Bellevue Hospital Medical College, New York City, 1914; physician for the city board of education; on the board of directors of the Fairmount Hospital; on the staff of the Jersey City Medical Center and the Greenville Hospital; died April 29, aged 65, of coronary disease.

**John, George W.** ✠ Beloit, Wis.; Northwestern University Medical School, Chicago, 1927; veteran of World War I; for many years physician for the Beloit Iron Works; member and past-president of the staff of the Beloit Municipal Hospital; died May 9, aged 58, of cerebral hemorrhage, arteriosclerosis, and uremia.

**Johnson, Arthur Collins,** Portsmouth, Va.; Leonard Medical School, Raleigh, N. C., 1910; died in the Maryview Hospital April 26, aged 80, of carcinoma of the pancreas.

**Johnston, Ernest H.** ✠ Waterbury, Conn.; University of Maryland School of Medicine, Baltimore, 1900; on the staffs of the St. Mary's Hospital and the Waterbury Hospital, where he died May 3, aged 77, of bronchopneumonia and adenocarcinoma of the rectosigmoid.

**Johnson, Robert Franklin,** Chicago; University of Chicago, the School of Medicine, Chicago, 1955; intern at San Francisco (Calif.) Hospital; died in Yosemite, Calif., May 27, aged 28, in an accidental fall while hiking.

**Jones, Melvin Rivers,** New Orleans; Louisiana State University School of Medicine, New Orleans, 1952; interned at the U. S. Naval Hospital in Philadelphia; served in the U. S. Naval Reserve; resident in ophthalmology at the Charity Hospital of Louisiana, where he died May 11, aged 27, of emboli of the lungs as the result of an automobile accident on April 16.

**Jones, Kneeland Parr** ✠ Kansas City, Mo.; Bellevue Hospital Medical College, New York City, 1885; died April 20, aged 94, of coronary arteriosclerosis.

**Jones, Murrell Douglas Thornton,** Bluffton, Ind.; Baylor University College of Medicine, Houston, Texas, 1951; interned at Cambridge City Hospital in Cambridge, Mass.; died in Atlantic City, N. J., May 5, aged 28.

**Keay, Forrest Lincoln** ✠ Rochester, N. H.; Dartmouth Medical School, Hanover, 1894; for many years Strafford County medical

referee; member of the board of health; on the staff of the Frisbie Memorial Hospital; died April 27, aged 91, of cancer and arteriosclerotic heart disease.

**Kelly, William Henry,** Sanford, Maine; Baltimore Medical College, 1905; died Feb. 18, aged 87, of coronary heart disease and arteriosclerosis.

**Killian, Frederick William,** Philadelphia; Jefferson Medical College of Philadelphia, 1905; died April 6, aged 76.

**Kimbrough, Ernest Moore** ✦ Haskell, Texas; Baylor University College of Medicine, Dallas, 1935; interned at the Hermann Hospital in Houston, where he served a residency; fellow of the American College of Surgeons; served during World War II; county health officer; on the staffs of the Hendrick Memorial Hospital in Abilene and the Haskell County Hospital; died May 6, aged 46, of coronary occlusion.

**Kimmel, Orlando Perry,** New Madison, Ohio; Eclectic Medical Institute, Cincinnati, 1890; on the staff of the Reid Memorial Hospital in Richmond, Ind.; died April 11, aged 89, of senility.

**Kincaid, John Luther,** Maplesville, Ala.; Birmingham Medical College, 1912; died in Montgomery April 4, aged 72, of injuries received in an automobile accident.

**King, Dale Murray,** Detroit; Cleveland University of Medicine and Surgery, 1896; served on the staffs of the Grace Hospital and the City of Detroit Receiving Hospital, where he died April 29, aged 81, of intracerebral hemorrhage.

**Klein, Henry Nicholas** ✦ St. Paul; University of Minnesota College of Medicine and Surgery, Minneapolis, 1905; veteran of the Spanish-American War and World War I; served on the staffs of Ancker, Charles T. Miller, and St. Luke's hospitals, and St. Joseph's Hospital, where he died April 16, aged 74, of carcinoma of the prostate with metastases to the bones.

**Klasons, Boris** ✦ Nassau, N. Y.; Latvijas Universitāte Medicinas Fakultate, Riga, Latvia, 1940; interned at the Memorial Hospital in Albany; aged 43, shot and killed by a patient June 2.

**Lath, Eugene Mabley,** Rochester, N. Y.; University of Buffalo School of Medicine, Buffalo, 1907; an associate member of the American Medical Association; on the staff of St. Mary's Hospital; member of the board of directors of Park Avenue Hospital, where he died May 15, aged 79, of cancer.

**Love, Robert Sidney** ✦ Oklahoma City; University of Tennessee College of Medicine, Memphis, 1917; died May 16, aged 67, of coronary thrombosis.

**McCanty, William Lee** ✦ Helmuth, N. Y.; University of Buffalo School of Medicine, 1915; veteran of World War I; for many years on the staff of the Gowanda State Homeopathic Hospital; died in the Buffalo General Hospital April 26, aged 64, of arteriosclerosis.

**McClane, John William,** Fernandina Beach, Fla.; Bennett Medical College, Chicago, 1914; member of the Florida Medical Association; veteran of World War I; health officer of Baker-Nassau Counties for many years; died May 3, aged 66.

**McGuire, John** ✦ Bluefield, W. Va.; Medical College of Virginia, Richmond, 1915; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; veteran of World War I; on the staffs of St. Luke's Hospital and Bluefield Sanitarium, where he died June 9, aged 67, of complications following brain abscess.

**McIver, Lynn** ✦ Sanford, N. C.; Kentucky University Medical Department, Louisville, 1901; for many years chairman of the school board; past-president of the Lee County Medical Society; died in the Lee County Hospital May 14, aged 80, of a ruptured varix.

**McKinley, Charles Franklin,** Atmore, Ala.; Medical College of Alabama, Mobile, 1907; died May 11, aged 73.

**McLandress, George Stuart,** Long Beach, Calif.; Saginaw (Mich.) Valley Medical College, 1899; fellow of the American College of Surgeons; died in the Long Beach Community Hospital April 16, aged 83, of carcinoma of the prostate.

**Mandelbaum, M. Joseph** ✦ New York City; Albany (N. Y.) Medical College, 1902; associated with the Hospital for Joint Diseases; died May 8, aged 74, of leukemia.

**Manion, Katherine C.,** Coronado, Calif.; University of Oregon Medical School, Portland, 1903; at one time practiced in Portland, Ore., and was treasurer of the Oregon State Medical Association; died in El Cajon April 23, aged 93, of heart disease.

**Manley, Marcus Leo** ✦ Chicago; Creighton University School of Medicine, Omaha, 1923; on the staff of the Little Company of Mary Hospital, Evergreen Park, where he died May 9, aged 58, of coronary disease.

**March, Linton Ellsworth** ✦ Birdsboro, Pa.; Jefferson Medical College of Philadelphia, 1934; veteran of World War II; interned at the Reading (Pa.) Hospital; died April 23, aged 47, of coronary occlusion.

**Martin, John Walter** ✦ Bethesda, Md.; Northwestern University Medical School, Chicago, 1903; member of the Medical Society of the District of Columbia and the American Academy of Dermatology and Syphilology; fellow of the American College of Surgeons; died May 22, aged 75, in the Doctors Hospital, Washington, D. C., of acute meningitis.

**Mays, Arthur Hugh,** Newman, Calif.; Medical Department of the University of California, San Francisco, 1887; for many years practiced in Sausalito; past-president of the Marin County Medical Society; died April 19, aged 89.

**Mensch, Harvey George** ✦ Elizabeth, N. J.; Jefferson Medical College of Philadelphia, 1926; member of the Industrial Medical Association; interned at Allegheny General Hospital in Pittsburgh; veteran of World War II; on the staff of the Elizabeth General Hospital and Dispensary; died May 2, aged 55.

**Merritt, Robert Elmer,** Pauma Valley, Calif.; Tufts College Medical School, Boston, 1917; died in Escondido April 5, aged 67.

**Metcalf, George Bradley** ✦ Anderson, Ind.; Indiana University School of Medicine, Indianapolis, 1920; formerly secretary of the Madison County Medical Society; died in the Robert W. Long Hospital, Indianapolis, March 13, aged 64.

**Milliette, Delphis Russell** ✦ Anna, Ohio; Medical College of Ohio, Cincinnati, 1903; for many years served on the village board of education and the Shelby County board of education; died April 16, aged 83.

**Mirkin, Charles Simpson,** New York City; University and Bellevue Hospital Medical College, New York City, 1919; member of the Medical Society of the State of New York; died May 14, aged 58, of coronary disease.

**Mitchell, William Earl,** Oakland, Calif.; University of Colorado School of Medicine, Denver, 1913; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; an associate member of the American Medical Association; on the staff and trustee at the Samuel Merritt Hospital; died in Berkeley May 22, aged 67, of arteriosclerotic heart disease.

**Monroe, Duncan J.** ✦ Elkton, Mich.; Saginaw Valley Medical College, Saginaw, 1903; on the staff of the Hubbard Memorial Hospital in Bade Axe; died April 21, aged 81, of medullary carcinoma.

**Montgomery, Carl S.** ✦ Stockland, Ill.; Illinois Medical College, Chicago, 1903; died April 26, aged 80.

**Morgan, Vance Fredrick** ✦ Harrah, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1934; formerly director of the Comanche County Health Department in Lawton; died April 13, aged 46, in an automobile accident.

**Moriarty, John Joseph,** Bloomfield, N. J.; Georgetown University School of Medicine, Washington, D. C., 1930; served during World War II; on the staff of St. Vincent's Hospital in Montclair; died May 23, aged 53, of uremia and malignant hypertension.

**Morton, William Glaspell,** Pasadena, Calif.; State University of Iowa College of Medicine, Iowa City, 1905; died April 20, aged 73.

**Mosher, Benjamin D.,** Sandwich, Ill.; Keokuk (Iowa) Medical College, 1898; veteran of World War I; on the staff of the Horatio N. Woodward Memorial Hospital; died in the Mendota (Ill.) Community Hospital May 14, aged 81, of thrombosis.

**Moss, Harry Joseph,** Beverly Hills, Calif.; Jefferson Medical College of Philadelphia, 1906; past-president of the Maryland Hospital Association; formerly on the editorial advisory board of *Hospital Management;* died in the Mount Sinai Hospital, Los Angeles, April 20, aged 72, of carcinoma of the rectum with metastases.

**Muehlig, George Florian,** Ann Arbor, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1912; member of the Michigan State Medical Society; for many years associated with St. Joseph's Mercy Hospital, where he was past-chief of staff, at one time a fellow in medicine at the Mayo Foundation in Rochester, Minn.; died March 31, aged 67, of ventricular fibrillation.

**Muetz, Walter** ⊕ Houston, Texas; Medizinische Fakultät der Universität, Vienna, Austria, 1935; member of the American Academy of General Practice; died April 3, aged 45, in an automobile accident.

**Murphy, Patrick Humphrey William** ⊕ Jersey City, N. J.; Georgetown University School of Medicine, Washington, D. C., 1928; during World War II an examining physician for Selective Service; on the staff of the Hudson County Institution for Geriatric Care in Secaucus, the Christ Hospital, and the Medical Center of Jersey City; died April 6, aged 55, of a heart attack.

**Murray, Alexander Eston** ⊕ Beaverdam, Va.; Medical College of Virginia, Richmond, 1905; past-president of the Hanover County Medical Society; for many years local surgeon for the Chesapeake and Ohio Railway Company; died April 28, aged 78, of cancer of the throat.

**Mussell, Arthur Robert,** Clare, Mich.; Bennett Medical College, Chicago, 1912; died in the Clare General Hospital April 15, aged 70, of medullary failure, cerebral edema, and peripheral vascular collapse.

**Nellans, Charles Thomas** ⊕ Roswell, Ga.; Rush Medical College, Chicago, 1919; at one time on the faculty of Yale University School of Medicine in New Haven, Conn.; formerly full-time physician to the U. S. Federal Penitentiary in Atlanta; retired from the Veterans Administration in Atlanta Dec. 31, 1952; died April 12, aged 61, of arteriosclerosis.

**Ney, Grover C.** ⊕ Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1908; member of the founders group of the American Board of Surgery; fellow of the American College of Surgeons; on the staff of the Sinai Hospital; died April 11, aged 70.

**Nichols, Frederick Graham** ⊕ Seattle; University of Oregon Medical School, Portland, 1913; an examiner for the Washington State Athletic Commission from 1931 to 1935; died April 12, aged 83.

**Nichols, William Sowell,** Lake City, Fla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1922; member of the Florida Medical Association; died March 28, aged 56, of coronary occlusion.

**Nielson, Karl O.** ⊕ Heber, Utah; Rush Medical College, Chicago, 1936; interned at the Salt Lake General Hospital in Salt Lake City; died in the Heber Hospital May 12, aged 51, of heart disease.

**Notkin, Meyer** ⊕ Paterson, N. J.; University of Michigan Medical School, Ann Arbor, 1932; specialist certified by the American Board of Internal Medicine; past-president of the Passaic County Heart Association; fellow of the American College of Cardiology; served during World War II; on the staff of St. Joseph Hospital; died in Rivervale April 25, aged 49, of acute coronary thrombosis.

**Noth, Henry William** ⊕ Minneapolis; University of Minnesota College of Medicine and Surgery, Minneapolis, 1903; died March 27, aged 78, of emphysema and arteriosclerosis.

**Ogden, Chester R.,** Clarksburg, W. Va.; Hospital College of Medicine, Louisville, Ky., 1902; an associate member and from 1916 through 1920 member of the House of Delegates of the American Medical Association; past-president and for many years member of the council of the West Virginia State Medical Association; served as president and secretary of the Harrison County Medical Society; fellow of the American College of Surgeons; formerly on the staff of St. Mary's Hospital; died May 31, aged 83.

**Osborn, Benjamin David** ⊕ Waldo, Ohio; Starling Medical College, Columbus, 1897; died May 3, aged 83, of heart disease.

**Otten, Erich** ⊕ Indianapolis; Rush Medical College, Chicago, 1932; member of the American Psychiatric Association and the Illinois State Medical Society; on the staff of the Central State Hospital; died in the Robert W. Long Hospital May 5, aged 53, of pulmonary thrombosis.

**Packer, John McKinley** ⊕ Ashland, Neb.; Eclectic Medical College, Cincinnati, 1915; veteran of World War I; on the staff of the Doctors Hospital, Omaha, where he died June 6, aged 72, of cerebral hemorrhage.

**Palmateer, Arthur Clare** ⊕ New York City; College of Physicians and Surgeons, Baltimore, 1906; on the staff and past-president of the medical board, St. Joseph's Hospital; on the staff of Bronx Eye and Ear Infirmary; died in the University Hospital April 27, aged 74, following a gallbladder operation.

**Palmer, Martin** ⊕ Hazard, Ky.; University of Louisville School of Medicine, 1930; member of the American Academy of General Practice; on the staff of the Mount Mary Hospital, where he died April 17, aged 54, of coronary thrombosis.

**Pater, Stanley John** ⊕ Hamilton, Ohio; St. Louis University School of Medicine, 1926; on the staffs of Mercy and Fort Hamilton hospitals; died in Brookville, Ind., April 15, aged 55, of carcinoma of the larynx.

**Peddicord, Harper** ⊕ Redwood City, Calif.; Southern Homeopathic Medical College, Baltimore, 1899; veteran of the Spanish-American War; formerly county health officer; on the staff of the Sequoia Hospital; died May 7, aged 81, of coronary thrombosis.

**Penhall, Fletcher Wellington** ⊕ Morton, Minn.; Trinity Medical College, Toronto, Canada, 1889; Bellevue Hospital Medical College, New York City, 1891; past-president of the Renville County Medical Society; formerly on the staff of the Willmar (Minn.) State Hospital; served on the village council and on the board of education; died in Redwood Falls April 1, aged 93.

**Perdue, James Devote** ⊕ Mobile, Ala.; Medical College of Alabama, Mobile, 1913; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology; for many years member of the board of censors, Alabama State Medical Association; fellow of the American College of Surgeons; veteran of World War I; on the staffs of the City and Providence hospitals; died May 18, aged 67, of hypertensive heart disease.

**Perrier, Joseph Louis,** New York City; University and Bellevue Hospital Medical College, New York City, 1913; died in the Knickerbocker Hospital May 4, aged 82.

**Petit, Henri Louis,** Chehalis, Wash.; College of Physicians and Surgeons, Boston, 1907; past-president of the Lewis County Medical Society; served on the staff of St. Helen Hospital, where he died April 17, aged 77, of cerebral hemorrhage.

**Petritz, Louis James** ⊕ Los Angeles; Northwestern University Medical School, Chicago, 1918; veteran of World War I; for many years surgeon for the city fire department; on the staff of Queen of Angels Hospital; died May 17, aged 62, of carcinoma of the stomach.

**Petruzzi, Joseph Anthony,** Elmsford, N. Y.; Tufts College Medical School, Boston, 1930; member of the Medical Society of the State of New York; physician for the police department, village of Elmsford, where he was physician for the schools; on the staff of the Phelps Memorial Hospital in North Tarrytown; died April 19, aged 50, of acute coronary occlusion.

**Phelan, Joseph Robert,** Oklahoma City; Barnes Medical College, St. Louis, 1898; past-president of the Oklahoma State Medical Association; died in Norman March 25, aged 83, of a heart attack.

**Phillips, Orlyn Sargent,** National City, Calif.; George Washington University School of Medicine, Washington, D. C., 1907;

served in France during World War I; formerly associated with the U. S. Public Health Service Reserve; died April 10, aged 79, of arteriosclerosis.

**Pierce, Glenn McKillips,** McKeesport, Pa.; Harvard Medical School, Boston, 1911; an associate member of the American Medical Association; on the staff of the McKeesport Hospital, where he died May 1, aged 70, of a fractured hip, bronchopneumonia, and coronary thrombosis.

**Pinson, Chris Henderson** ✙ Alpharetta, Ga.; Memphis (Tenn.) Hospital Medical College, 1906; veteran of World War I; died April 9, aged 74, of coronary thrombosis and arteriosclerosis.

**Potts, William Joseph, Jr.** ✙ Kane, Pa.; University of Pittsburgh School of Medicine, 1945; interned at St. Vincent's Hospital, Erie, where he served a residency; died May 6, aged 35, of coronary occlusion.

**Powell, George F.,** Abilene, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1889; for many years superintendent of the Terrell (Texas) State Hospital; died May 6, aged 92, of myocarditis.

**Prentice, George Lee** ✙ Troy, Iowa; Rush Medical College, Chicago, 1900; past-president of the Davis County Medical Society; veteran of World War I; on the staff of the Ottumwa (Iowa) Hospital; formerly on the staff of the Indiana State Soldiers' Home Hospital, Lafayette, Ind., and the National Home for Disabled Volunteer Soldiers in Danville, Ill.; died in Ottumwa April 22, aged 77, of coronary disease.

**Prince, Charles Calvin,** Long Beach, Calif.; College of Medical Evangelists, Loma Linda and Los Angeles, 1930; certified by the National Board of Medical Examiners; an associate member of the American Medical Association; on the staffs of St. Mary's Long Beach Hospital, Long Beach Community Hospital, and the Seaside Memorial Hospital; died April 28, aged 51, of hypertension and arteriosclerosis.

**Promin, David** ✙ Philadelphia; Jefferson Medical College of Philadelphia, 1927; specialist certified by the American Board of Obstetrics and Gynecology; fellow of the International College of Surgeons and the American College of Surgeons; on the staffs of the Abington (Pa.) Memorial Hospital, Frankford and Albert Einstein Medical Center hospitals; died May 26, aged 53, of coronary thrombosis.

**Proudfoot, Charles Paris,** Arcadia, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; died in Pasadena May 10, aged 83, of coronary thrombosis and arteriosclerosis.

**Pulaski, Leo Edward** ✙ Shenandoah, Pa.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1925; interned at the Mercy Hospital in Baltimore; during World War I accepted an appointment to the West Point Military Academy; on the staff of the Locust Mountain State Hospital; past-president of the Shenandoah Medical Society; school physician; died in the Hospital of the University of Pennsylvania, Philadelphia, May 6, aged 57, of rheumatic heart disease.

**Quick, Edward William** ✙ Milwaukee; Rush Medical College, Chicago, 1902; fellow of the American College of Surgeons; on the staffs of the Evangelical Deaconess Hospital and the Columbia Hospital, where he died April 10, aged 86, of bleeding duodenal ulcer and peritonitis after gastric resection.

**Ragle, Benjamin Harrison** ✙ Boston; Harvard Medical School, Boston, 1916; specialist certified by the American Board of Internal Medicine; member of the Endocrine Society; fellow of the American College of Physicians; consultant, Massachusetts General Hospital, and member of visiting staff, Massachusetts General Hospital, Phillips House; on the courtesy staff, Mount Auburn Hospital, Cambridge; member of the board of trustees, Austen Riggs Foundation in Stockbridge; died May 1, aged 67, of cerebral hemorrhage.

**Ramey, Ralph Emerson** ✙ Blacklick, Ohio; Ohio State University College of Medicine, Columbus, 1928; veteran of World War I; medical examiner for the armed forces during World War II; died in Whitehall April 10, aged 57, of coronary occlusion.

**Rayner, Herbert Wollesley,** Sacramento, Calif.; Rush Medical College, Chicago, 1901; on the staffs of the Sutter Hospital and the Mercy Hospital, where he died May 16, aged 83, of arteriosclerotic heart disease.

**Reed, Torrance** ✙ Grand Rapids, Mich.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1912; veteran of World War I; on the staffs of the Butterworth and St. Mary's hospitals, and the Blodgett Memorial Hospital, where he died April 26, aged 66, of cerebral thrombosis.

**Reich, Joseph Paul** ✙ Chicago, Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau, Prussia, Germany, 1910; specialist certified by the American Board of Psychiatry and Neurology; at one time on the faculty of the Chicago Medical School; on the staff of the Michael Reese Hospital; died April 23, aged 68, of cerebral hemorrhage and cerebral arteriosclerosis.

**Reichert, Rudolph Joe** ✙ Norman, Okla.; State University of Iowa College of Medicine, Iowa City, 1930; served during World War II; on the staff of the Central State Griffin Memorial Hospital; died May 7, aged 57, of myocardial infarction.

**Renton, George Wellington** ✙ Detroit; Western University Faculty of Medicine, London, Ontario, Canada, 1916; during World Wars I and II, served in the Canadian Army as a major in the Medical Corps; after World War I worked with the Department of Veterans Affairs, London, Ontario, until 1923, when he came to Detroit; associated with the Dearborn (Mich.) Medical Center; on the staffs of the Mount Carmel Mercy Hospital and Providence Hospital, where he died June 10, aged 62, of cancer.

**Resseguie, Frederic John** ✙ Saratoga Springs, N. Y.; Albany (N. Y.) Medical College, 1895; president of the Saratoga National Bank; fellow of the American College of Surgeons; member of the honorary staff as consulting surgeon, Saratoga Hospital, where he served in various capacities; died May 12, aged 81, of coronary thrombosis.

**Richardson, Alfred Lawrence,** La Grande, Ore.; American Medical College, St. Louis, 1890; at one time mayor of La Grande; died May 8, aged 89.

**Riester, Herman William** ✙ Erie, Pa.; University of Pittsburgh School of Medicine, 1931; served during World War II; acting assistant surgeon for the U. S. Public Health Service; active on the surgical staff at the Hamot Hospital, where he interned, and where he died May 8, aged 49, of pneumonia.

**Riggs, George Elmer** ✙ Muskogee, Okla.; University of Oregon Medical School, Portland, 1911; associated with the Regional Office of the Veterans Administration; died in the Veterans Administration Hospital March 6, aged 71, of myocardial infarction.

**Robbins, Clarence Edward** ✙ Pierre, S. D.; Harvard Medical School, Boston, 1923; specialist certified by the American Board of Otolaryngology; fellow of the American College of Surgeons; past-president of the South Dakota State Medical Association; on the staff of St. Mary's Hospital, where he died May 27, aged 56, of hypertensive cardiovascular disease with decompensation.

**Roberts, Austin Clay,** Loveland, Ohio; Starling Medical College, Columbus, 1890; died April 2, aged 93.

**Robinson, Cornelius Byron** ✙ Marion, Ala.; Louisville (Ky.) Medical College, 1892; died April 25, aged 84, of myocarditis.

**Robinson, Roy Forrest** ✙ Madisonville, Ky.; Louisville (Ky.) Medical College, 1906, for many years member of the school board; on the staff of the Madisonville Hospital; died April 1, aged 71, of coronary thrombosis.

**Rosenthal, Gerhard** ✙ Blasdell, N. Y.; Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1927; member of the American Academy of General Practice; died April 6, aged 53, of cerebral vascular accident and chronic glomerulonephritis.

**Rowe, Walter Cilley** ✙ Concord, N. H.; Dartmouth Medical School, Hanover, 1899; formerly city health officer; died May 14, aged 83.

**Schumacher, Nicholas William** ✙ Hettinger, N. D.; Minneapolis College of Physicians and Surgeons, 1911; died in Los Angeles March 22, aged 77, of coronary thrombosis.

# FOREIGN LETTERS

## FINLAND

**Thrombosis and Its Sequelae.**—With a view to appraising the socioeconomic effect of post-thrombotic sequelae, a survey was made by Dr. Harry Zilliacus of the University of Helsinki. In a series of 680 patients (541 women and 139 men) who had previously had an acute thrombosis or a pulmonary embolus, only 48 (7%) had a completely normal leg. Pain and a feeling of heaviness were present in about 90%; chronic discoloration, induration, and eczema in 50 to 60%; and ulcers or other complications in 20%. Subsequent social and economic effect was carefully studied in 510 patients, of whom 78 had one or several relapses, 133 required an additional household assistant, 80 had to change their profession or occupation, and 54 were totally incapacitated.

**Causes of Goiter.**—Järvinen and Leikola reported a series of 952 patients with nontoxic goiter (*Annales medicinae internae fenniae*, volume 45, part 1, 1956). The incidence of simple goiter in women was twice that in men. The patients' occupation or standard of living was not found to play any part. No difference from the control group was noted in the incidence of numerous diseases except that neuroses were more frequent in the patients with goiter. Chronic valvular diseases of the heart were less prevalent in those with goiter. The possible influence of pregnancies was not determined with certainty. The number of full-term pregnancies was lower in those with simple goiter than among the controls. In the group with simple goiter, both men and women were taller on the average than the controls and those who were overly tall were more numerous. In the winter the iodine content of main water was determined to be 0 mcg. per liter and in the summer 46 mcg. per liter. The investigations did not corroborate the assumption that a lack of iodine was the decisive causal factor responsible for simple goiter in Helsinki. Certain factors usually induce a slight increase in thyroid secretion without producing a goitrous enlargement of the thyroid. The work suggested that, as these factors do produce goiter in Helsinki, the population there is predisposed to formation of goiter. The cold climate of Helsinki appeared to be one predisposing factor.

## FRANCE

**Cerebral Hemispherectomy.**—D. Ferey in the Jan. 18 issue of *La presse médicale* reported a series of 10 cerebral hemispherectomies for hemiplegia and encephalopathy in infants. It is hard to decide when such an operation should be performed. The main point is to have a healthy cerebral lobe. If the lobe to remain shows small atrophic lesions that can be identified by pneumoencephalography, it is not advisable to operate. A complete hemispherectomy improved eight patients in this series. This procedure is especially successful for the treatment of infantile hemiplegia and mental retardation of hemiplegics. In the successful cases the epileptic seizures disappeared and the children's behavior improved.

**Spiramycin in the Treatment of Pneumonia.**—Soulage and his co-workers in the Jan. 21 issue of *La presse médicale* reported that small doses of spiramycin given by mouth controlled the fever and symptoms in patients with pneumonia more rapidly than did penicillin. Although North Africans are very sensitive to the pneumococcus, the treatment was usually successful. No intolerance or intestinal troubles were observed. The dose used ranged from 1.5 to 3 gm. per day for 5 to 10 days.

**Ion Exchange, Vascular Tonus, and Cell Metabolism.**—Laborit and Huguenard (*Presse méd.* 64:605, 1956) reported that the variations observed in the ion found in serum and excreta give clues to the functioning of the cell. They found that polarization of the cell membrane depends chiefly on the ratio of intracellular to extracellular potassium ions. Polarizing agents (neuroplegic agents, insulin and glucose, and hyperventilation) increase intracellular and depolarizing agents increase extracellular potassium. Gross bleeding is depolarizing, but control of the hemorrhage and hemodilution result in polarization. An increase in extracellular sodium favors depolarization, and so does hypothermia. Effective cell metabolism depends on a correct polarization. This is maintained by shifts in extracellular and intracellular potassium and sodium. General resuscitation involves both sides of the cell membrane and avoids increasing of the extracellular concentration of sodium. To this end therapeutic bleeding may be of some value.

**Manifestations of Porphyria.**—Mazingarbe and his co-workers (*Presse méd.* 64:627, 1956) stated that porphyria, particularly in its intermittent acute variety, may simulate an acute or subacute surgical affection. In the authors' series of 18 patients with intermittent acute porphyria and abdominal signs for which an operation was considered, explorative laparotomy was performed on 12. In the remaining six patients, a correct diagnosis prevented a needless operation. In this series the commonest misleading syndrome suggested intestinal obstruction; a pseudopancreatic and a pseudoappendictic syndrome were also observed. Operation should be avoided, as it often accelerates the disease process and may cause a severe infection owing to the extreme susceptibility of these patients to common pathogens. The diagnosis of pseudosurgical manifestations of porphyria is often difficult, especially in acute cases. The possibility of this condition should be borne in mind in the event of any abdominal syndrome in which the clinical, hematological, and radiological features are inconsistent or ill-defined. The diagnosis should be suspected from the history of previous similar attacks having spontaneously cleared up, the symptomatic grouping, and the presence of associated signs.

**Permeability of Meninges to Isoniazid.**—Janbon and his coworkers reported to the Society of Medical and Biological Sciences of Montpellier on Jan. 6 that assays made in 15 patients with healthy or pathological meninges proved that isoniazid acts like a small molecular substance and penetrates the blood-brain barrier. In one patient with tuberculous meningitis who was given isoniazid only by mouth (in doses totaling 600 mg. per day), the spinal level rose progressively, from 4.45 to 7 mcg. per cubic centimeter. In another patient, whose initial level was only 1.36 mcg. per cubic centimeter and who was given the same amount of the drug by mouth, it was necessary, because of a delay in clinical improvement, to add spinal injections. These proved rapidly effective, and the spinal level subsequently remained high despite a decrease in the spinal injections. These observations indicate that permeability of the meninges to isoniazid increased during the course of treated meningitis and that in certain patients intrathecal injections may be necessary at first in order to assure the therapeutic result.

**Anaerobic Corynebacteria in the Blood and Various Organs.**—Janbon and his co-workers, at a meeting of the Society of Medical and Biological Sciences of Montpellier on Jan. 20, reported that more than a year after accidental discovery of a bacteriemia due to anaerobic corynebacteria in a patient, an acute leukemia developed. This caused them to look for anaerobic corynebacteria in the blood, marrow, lymph nodes, and other organs in a series of 30 patients. Of these, 6 patients with Hodgkin's disease, 7 with leukemia, and 5 with reticuloses, malignant sarcomatoses, and various other conditions, or 18 patients in all, yielded one or more cultures of various anaerobic corynebacteria (C. anaerobium, C. parvum, and C. liquefaciens). The authors believe that the passage into the circulation of these organisms is proof of disease characterized by disordered participation of the reticuloendothelial system.

The items in these letters are contributed by regular correspondents in the various foreign countries.

**Convulsions in Mongoloids.**—Contrary to the findings of the Spanish pediatrician L. F. Camarasa, who observed convulsions in only 1.6% of Mongoloid children, Schachter (*Journal de médecine de Paris*, March, 1956) observed convulsions in 7.6% of his series of 158 Mongoloid children. In these children he found prematurity as a predisposing factor in 37.3%. The author believes that the published figures do not present a true picture because many parents no longer remember whether the child suffered convulsions or not and small convulsions often go unrecognized. For this reason the problem of convulsions in the antecedents of mental deficiency ought to be more closely studied.

**Placenta Accreta.**—In *Gynécologie et obstétrique* (vol. 154, no. 3, page 345), Gabriel and Ambre reported three cases of placenta accreta, a condition that occurred once in an average of 15,000 deliveries. This condition may be caused by (1) a congenital anomaly, malformation, or hypoplasia of the endometrium; (2) the gynecologic or obstetric accidents preceding the pregnancy; or (3) low implantation of the ovum. In 90% of cases, the patient is a multipara. In 20% of these patients, severe hemorrhages attended the delivery, often necessitating hysterectomy. The fetal mortality is high, and some malformations are likely to be present in the infant.

**Prednisone for Multiple Sclerosis.**—At a meeting of the Medical Society of Paris Hospitals in March, R. Claisse and his co-workers reported a series of 56 patients with multiple sclerosis who had been under treatment for about nine years. After taking prednisone for three months, 23 of the patients were sufficiently improved that active reeducation was possible; 28 were not improved; and in 5 this treatment was stopped because of such complications as glycosuria, hypertension, or lighting up of some pulmonary lesions. The daily dose did not exceed 20 mg. Of the 23 who were benefited, the phonation disorders in 4, the deglutition disorders in 3, and the sphincteral disorders in 7 were improved.

## ISRAEL

**Incidence of Diabetes Among Jews.**—The opinion that diabetes is much more frequent among Jews than among other peoples is found in most medical textbooks. Because the basis for this opinion appeared to be unreliable, Hermann Steinitz (*Harefuah* 50:107, 1956) conducted a new survey in the spring of 1955 based on the data of the food rationing authorities. It can be assumed that nearly every diabetic claimed his extra ration of food sold at minimal cost. Among 817,000 persons, a little less than half the country's population, in the three main cities (Jerusalem, Tel Aviv–Jaffa, and Haifa) and in two smaller towns (Petach-Tikvah and Rehovoth), 9,050 diabetics, a rate of 1.1%, were registered. The highest incidence (1.53%) was found in Tel-Aviv–Jaffa and the lowest (0.45%) in Rehovoth. It is true that these figures do not include all the diabetics in the country but represent only the known diabetics. In Israel, however, about 75% of the population is insured in various health insurance schemes, and there is no doubt that advantage is taken of the opportunity for frequent examination. Therefore few diabetics evade detection for long. It may be objected that due to immigration Israel has a high percentage of young people with a low diabetes rate, but the present material is composed mostly of the urban population and not the rural part of the country with its greater concentration of young people. The estimated rate is similar to that of many other civilized countries in which diabetics constitute between 1.5 and 2% of the total population. On the basis of this survey, it can be concluded that diabetes is not particularly prevalent among Jews in Israel. Where higher figures among Jews were found, other contributory factors, such as higher rate of detection due to better medical care, intermarriage of diabetics, a sedentary way of life, and a high incidence of obesity, cholelithiasis, and other diseases favoring the development of diabetes may be responsible.

**Bronchial Asthma.**—At a meeting of the Association for Allergy and Internal Medicine in Jerusalem, I. M. Gutmann stressed the influences of environment in causing asthma. He had especially observed a group of immigrants from Iraq who in their home country had been free from asthma. Soon after they settled in Israel they showed typical signs of asthma. The immigration of Iraqi Jews in 1951 and 1952 numbered about 124,000. Of these, about 90,000 came from Baghdad, where they were relatively well off. The climate in Baghdad is hot and dry in summer and cold and dry in winter. Most of the immigrants who settled down at Ramat-Gan, a town near the sea, shortly after their arrival in Israel showed typical symptoms of bronchial asthma. Most patients belong to the age group 20-40. In contrast to the occurrence of allergic symptoms in this age group in the whole population, the percentage in the Iraqi group living at Ramat-Gan was 50. The main causes of the asthma were bacterial allergens and fungi. Practically none showed an allergy to pollen of foods. The climate at Ramat-Gan and environs is different from that of Baghdad; in summer the relative humidity is higher. The question arises, however, why other immigrants from Iraq, for instance those living in the Tiberias or Beersheba area, do not suffer from asthma. It is suggested that a sensitization by the existing pollen probably occurs and that a psychosociologic cause may be important, in that only a small number of these immigrants are able to maintain their former standard of living. Although not poor, they are faced with the difficulties of adapting themselves to the new environment. In recent years the frequency of asthma in this group has been diminishing. This is due not only to therapy but also (and perhaps more important) to the fact that adjustment to the new life has been successful. In another group, patients who formerly had been inmates of concentration camps are being treated. Almost all people of this group had one thing in common: before their incarceration they had been chronic asthmatics. In spite of the changed living conditions they had lost their asthma while confined. In some a recurrence of the asthma was observed after release from concentration camp.

**Dermatoendocrinological Syndrome Due to Diethylstilbestrol.**—I. Katzenellenbogen reported in *Harefuah* (50:241, 1956) on a dermatoendocrinological syndrome connected with the production and use of diethylstilbestrol. The method of caponizing cockerels by implants of the hormone has gained great popularity in Israel, and hence the production of diethylstilbestrol has increased. The dangers of absorbing even small amounts of the drug by ingestion, inhalation, and percutaneously were not realized until recently. Since February, 1956, 13 adults (11 men) engaged in the manufacture or handling of pellets and tablets of the drug and 7 children were found to be affected. The clinical symptoms in the men included tingling in the nipples; tenderness in the breast; development of nodules, often unilateral, under the nipple area; later gynecomastia and decreased libido; and finally impotence. The first symptoms usually started a few days after the worker was engaged. Two to three months after he had stopped working, all signs disappeared. All affected workers had been handling the drug for only a short time, except two who had worked in its production for over a year. In addition to the symptoms mentioned, they showed dotted or striped, knotted pigmentation in the nipple area. One also had an atrophic testis. While no pigmentation was found in the other adults, all the children affected had dark pigmentation in the navel and the nipples. In the boys the skin of the scrotum and half of the penis was darkly pigmented. In three children an acanthosis-like syndrome was observed. The increased pigmentation was restricted to parts physiologically prone to pigmentation, including pigmented moles, but entirely absent from the face. Pseudopubertas praecox with a marked increase in size of the breast and menstruation was noted in two sisters, one 10 and the other 4 years old. It is suggested that the striking pigmentation in children might serve as an indication of the absorption of even minimal amounts of diethylstilbestrol. This would contribute toward solving the riddle of whether remnants of the drug continue to contaminate the poultry. A special commission has been appointed to study

the dangers involved in the use of diethylstilbestrol. These dangers affect workers in factories producing the pellets, farm hands using them, and the public consuming the fowl castrated by this means.

## ITALY

**Genital Tuberculosis in Women.**—Prof. Francesco Vozza stated that the diagnosis of genital tuberculosis in women is often made only at operation or autopsy (*Annali Ravasini*, no. 6, April 15, 1956). Genital tuberculosis associated with tuberculous lesions in other organs is more frequent than the so-called isolated form, in which the disease is limited to the genital organs. Pregnancy is rare in women with genital tuberculosis but may occur in those whose disease is cured by use of antibiotics. The clinical manifestations of genital tuberculosis are protean. It may be asymptomatic, and the patient may consult her physician for amenorrhea or for sterility, the cause of which she does not know. On the other hand, the onset may be sudden, with symptoms suggestive of a severe pelvic peritonitis or appendicitis. If tuberculosis is suspected, tubercle bacilli should be looked for in the menstrual blood or the cervical secretions. Celioscopy is not advisable. Hysterosalpingography should be performed with extreme caution. The treatment should be medical, except in selected afebrile patients in whom the disease is stabilized and localized in the genital organs.

**Cardiac Surgery.**—At a meeting of the Società Medico-Chirurgica of Bari in March, Professor DeBlasi reported a series of 43 patients with cardiac disease on whom he had operated. Ten patients with constrictive pericarditis underwent extensive decortication and 28 with mitral stenosis, commissurotomy. The speaker stressed the necessity for generalized antirheumatic treatment preoperatively and the use of the valvulotome in order to prevent trauma to the valve in case it cannot be easily opened with the finger. The remaining five patients had pure pulmonary stenosis and tetralogy of Fallot. They underwent transventricular valvotomy and pulmonary subclavian anastomosis of the Blalock type. There were no deaths in this series. The functional results were satisfactory in some patients even four years after the operation.

## NEW ZEALAND

**Production of Renin.**—McQueen has reported (*Proc. Univ. Otago M. School* **34**:3, 1956) the results of experiments on vascular reactivity in experimental renal hypertension in the rat. In a series of experiments one kidney was removed, and a week later the artery of the remaining kidney was partially occluded. After this procedure the rats drank 1.5% sodium chloride solution. In a second series, a clip was applied to the renal artery, the other kidney remaining intact. Vascular reactivity, assessed in all cases by means of the perfused rat hindquarter preparation, was increased in both groups. The increased reactivity is clearly not due to diminution in functioning renal tissue and must be presumed to result from the effect of a substance released from the ischemic kidney. This interpretation seems to revive the debated question of the production of renin by the kidney.

**Adaptation to Cold.**—Hornabrook and Purves have shown (*Proc. Univ. Otago M. School* **34**: 6, 1956) that replacement therapy with either L-thyroxin (1.25 mcg. daily) or cortisone acetate (1.25 mg. daily) improves resistance to cold in hypophysectomized rats. Thyroxin has proved to be more effective than cortisone. Both hormones in combination restore hypophysectomized rats to normal, with rats being able to resist continuous exposure to a temperature of 4 C for 10 days. The authors concluded that, from the effectiveness of replacement therapy with cortisone and thyroxin, thyrotropin and corticotropin are the only pituitary factors involved in the adaptation of rats to cold. These findings may be of great interest in connection with the New Zealand expedition to Antarctica planned for next year.

**Antidiuretic Effect of Serotonin.**—Waal and Veale (*Proc. Univ. Otago M. School* **34**:12, 1956) have assessed the antidiuretic effect of serotonin in mice. The amount of urine collected in groups of four mice after two hours, expressed as a percent of the water given, was 61% for the controls but only 34% for the mice that had been given 0.5 mg. per kilogram of body weight of serotonin. A 5-mg. per kilogram dose of serotonin had a more marked effect. Similar effects were observed with 0.5 unit per kilogram of body weight of posterior pituitary injection, but, whereas the chloride concentration in the urine of the mice treated with serotonin was significantly lower than that for the controls, that of the mice treated with posterior pituitary injection was significantly higher. This result indicates that the modes of action of the two drugs are different. The antidiuretic effect of serotonin could be the result of diminished blood flow through the kidney.

**Large Babies.**—A 15-lb. (6,804 gm.) baby is always news, since most physicians never see one of this size, and the event is still more remarkable when the same mother delivers herself of a 13½-lb. (6,123 gm.) baby the following year. Dr. H. P. Dunn (*New Zealand M. J.* **55**:141, 1956) reported that the babies' mother was a 20-year-old woman experiencing her fourth and fifth pregnancies. She was of massive build and weighed 227 lb. (103 kg.) when not pregnant and was 5 ft. 7 in. (170.18 cm.) in height. The first baby, a boy 27 in. (68.58 cm.) long, weighed 15 lb. Although the head was delivered easily, there was great difficulty with the shoulders, but delivery was accomplished without laceration of the perineum. Eighteen months later the patient reported with a new pregnancy. She had an easy spontaneous delivery of a boy weighing 13½ lb. A glucose tolerance test confirmed the suspicion of prediabetes in the mother, but no sugar was detectable in the urine at any time. The association of large babies and maternal diabetes, or prediabetes, is well recognized. The probable explanation of the mechanism is that the growth hormone is identical with the diabetogenic hormone, and in immature animals it causes growth but when injected into mature animals it causes diabetes.

**Vanishing Tuberculosis.**—An important addition to the 1954 decisions of the Otago Hospital board that the Pleasant Valley Sanatorium was no longer needed and of the Health Department that the construction of a new 140-bed sanatorium should be abandoned is the announcement by the government in June that it intends to close the Pukeora institution near Waipukarau. The Minister of Health pointed out that the closing of this institution would save the country about $700,000 for improvements, exclusive of maintenance costs. The most heartening development, however, is represented not so much in money saved as in the progress made in checking tuberculosis and in the rehabilitation of the ill. The tendency now is to concentrate accommodation as much as possible on general hospitals in expectation of the time when tuberculosis will be no longer a problem of magnitude. The new system of classing the trouble as just another type of infection and not segregating patients behind a barrier, as it were, has the advantages that patients will be treated by the most modern methods and nearer their homes and therefore in closer touch with relatives and friends, whose regular visits are likely to contribute to the cure. There will be general approval, moreover, of the government's decision to increase the social security benefit for patients with tuberculosis. This is another step in the campaign which should help to overcome reluctance to undergo x-ray examination lest it should indicate the presence of the disease and create the threat of reduced earning power.

**Lumbago.**—Dr. G. C. Jennings (*New Zealand M. J.* **54**:691, 1955) stated that in most sports activities (like horseback riding) the spine is extended and the lumbar curve maintained. In a motor car, however, it is easy to sit with the lumbar curve flattened or reversed. Even with the best of roads and modern low-pressure tires, a certain amount of up-and-down movement occurs in traveling. This is something relatively new in demands on the lumbar spine. In patients under anesthesia, especially with modern relaxants, it is also hazardous to flex the lumbar spine. Dr. Jennings has emphasized that in a car the habit of

correct posture should be encouraged as a prophylactic measure and sometimes a special cushion should be used. He has designed a sponge rubber lumbar cushion to be attached to the back of the driver's seat.

**Safety Belts for Drivers.**—Dr. C. Milsom (*New Zealand M. J.* 54:719, 1955) reported that in several motor accidents the front-seat passenger has sustained gross injury despite a relatively minor impact. In most of these cases the driver, supported by the steering wheel and having warning of the impact, escaped with surprisingly little injury. Dr. Milsom advocates the use of a safety belt that is cheaply manufactured, easy to fit, and in no way restricts the movement of the wearer. Using the body weight of its wearer and no buckles, it is surprisingly easy to don and cannot trap the wearer. The belt is a long strap about 2 in. wide secured at one end to the floor behind the front seat. It is worn by passing it up over the top of the front seat, over the right shoulder of the passenger, and then diagonally down across the chest and abdomen, and finally it is tucked under the left thigh. If a sudden deceleration occurs, the weight of the passenger allows the belt to pay out about the passenger in the same manner as a line to a boat pays out around a bollard. The belt therefore allows the passenger to rise forward without bringing him to such an abrupt stop that the head may whip forward. Dr. Milsom warns those careful drivers who think they do not drive fast enough to need safety belts that, in his experience, the genuinely careful driver is just as frequently injured as is the negligent one.

## PERU

**American Trypanosomiasis.**—In *Revista de Medicina Experimental* (volume 9, 1952-1955) Dr. Arístides Herrer reports that Triatoma infestans is the only vector of American trypanosomiasis in southwestern Peru. Its present distribution is along the western slope of the Andes from the 14th to the 18th parallel of south latitude and from sea level to about 3,500 m. (11,482 ft.) of altitude. In most of the investigated places, T. infestans was found to be infected with Trypanosoma cruzi, the rates of infection varying according to the domestic animals on which the insect feeds. Locations where guinea pigs are raised presented the highest incidence of infection. Searching for natural infections, blood smears from 356 animals, including 297 guinea pigs, 14 rabbits, 8 cats, and 5 pigs, were examined, and 17 guinea pigs and one cat were found to be infected. The guinea pig is one of the main hosts of T. infestans, and, because of the frequent transportation of guinea pigs from one location to another, it is assumed that this rodent constitutes an active means of disseminating the parasites. The antimalarial application of chlorophenothane (DDT) by the Ministry of Public Health and Social Welfare, between 1948 and 1951, had as a side-effect a significant reduction of Triatoma infestation and hence of the incidence of trypanosomiasis. Unfortunately these gratifying results are not likely to endure, because the antimalarial campaign has been interrupted. Entomologic studies in the basin of the Marañón River, between 450 m. (1,476 ft.) and 2,700 m. (8,864 ft.) above sea level, have proved the Panstrongylus herreri to be the vector of the T. cruzi.

## TURKEY

**Hyperimmune Antirabic Serum.**—In the *Turkish Bulletin of Hygiene and Experimental Biology* (15:307, 1955), Berke and Türkay reported on their use of hyperimmune antirabic serum administered alone and prior to vaccination. Until January, 1955, antirabic hyperimmune serum combined with the Högyes treatment was used. In 1953, 3 of 44 patients who had received severe bites from rabid animals and who were given this treatment died. Using a new method the authors had no deaths during or at the end of the treatment among the patients with severe bites from animals with rabies confirmed by laboratory examination. Hyperimmune antirabic serum was given subcutaneously or intramuscularly close to the wound prior to vaccination with Semple or Högyes type of vaccine. As free virus is found in the infected area for up to 72 hours, the serum, if given within this period, neutralizes the virus, decreases absorption into nervous tissue, and prolongs the incubation period. The serum used for this purpose should be high in neutralizing potency, concentrated, and purified. Hyperimmune serum should be given when persons with severe bites from animals suspected or confirmed to be rabid have wounds close to or involving the head and when not more than 72 hours have elapsed after the wound was incurred. The wound should immediately be disinfected, and part of the hyperimmune serum should be injected by infiltration close to the wound, the rest of the dose being given subcutaneously or intramuscularly. This should be repeated twice daily, using a total dose of 0.5 cc. of hyperimmune antirabic serum per kilogram of body weight for two days. This is followed by the Semple type of vaccine, using a daily dose of 4 cc. for adults and 2 cc. for children under 5 years of age. If a patient applies for prophylactic therapy 72 hours after the wound was incurred, the Semple vaccine only should be given, the period of treatment being 24 days. In such cases a daily dose of 6 cc. for adults and 3 cc. for children under 5 years of age is used. Precautions should be taken to prevent anaphylactic reactions.

**Thallium Poisoning.**—In the same bulletin (15:299, 1955) Dr. Sükrü Kaymakçalan reviewed the toxic effects of thallium and other rodenticides and reported on his investigation concerning thallium poisoning in seven persons, resulting in the death of two, a child aged 5 years and a child aged 2. Because bread was suspected as the cause, flour from a town in southern Anatolia was analyzed. Biological and chemical tests revealed the presence of thallium. Presumably a thallium-containing rodenticide had been ground with the flour through carelessness. As a result, the Ministry of Health and Social Assistance restricted the sale and application of all kinds of rodenticides. There was partial unconsciousness; loss of orientation, memory, and vision; tremor of the hands; nausea; constipation; and loss of appetite with revulsion to the odor of fat. There was severe pain in the legs with resultant inability to walk and loss of hair, nails, and the skin of the feet. At the hospital the cause of these conditions was not discovered. When the patients went home and the same symptoms reappeared, the bread was suspected, especially since the two families procured their flour from the same source. Although one of the female patients was six months pregnant, no abortion occurred.

## UNITED KINGDOM

**Nystagmus in Alcoholic Intoxication.**—The high incidence of nystagmus reported in drunken motorists suggests that it might be used as a physical sign in medicolegal cases in which alcoholic intoxication is alleged. Dr. D. E. Howells confirmed the presence of nystagmus in volunteers given ethyl alcohol and determined the amount needed to produce this sign (*Brit. M. J.* 1:1405, 1956). Reaction time was determined before the alcohol was taken and at least two and one-half hours after the last meal had been eaten. The alcohol was diluted with an equal volume of lime juice and water and consumed within 10 minutes. Reaction time was determined for response to a visual stimulus from a neon light or to an auditory stimulus from a loud-speaker, the reaction being automatically recorded by an electrical system worked by extension of the flexed finger. In all subjects tested, the appearance of nystagmus was accompanied by an increase in reaction time. The increase at the onset of this physical sign varied from 4.3 to 35.9%. The appearance of nystagmus after ingestion of alcohol suggests that a subject of average weight has received a minimum of 50 ml. of absolute alcohol or its equivalent. The consumption of this amount is sufficient to impair the judgment of a motorist. The increase in reaction time is an indication of impaired functioning of the central nervous system. The fact that no other ocular sign was found indicates that nystagmus is the earliest ocular sign produced by alcohol and does not depend on any abnormality of the pupil size or reaction.

**Rostral Lobotomy.**—It has long been recognized that the effects of a standard prefrontal lobotomy in the plane of the coronal suture can be very damaging to the personality of the patient. Modifications of this operation have been devised that are therapeutic without inflicting grievous damage on the intellect and personality. Dr. J. Pippard (*Brit. M. J.* 1:1402, 1956) has investigated the long-term results of McKissock's modified operation, rostral lobotomy, in 240 patients who were followed up for periods ranging from one and one-half to five years after the operation. Only 210 of the 240 were interviewed, 13 having died and 17 being untraceable. Nearly half the patients were psychoneurotic or psychopathic, and a third suffered from affective disorders, mostly depressions. There was an operative mortality of 1%, a risk of lastingly serious personality damage as a result of cerebral hemorrhage in about the same percentage, and epilepsy in about 5%.

In patients with uncomplicated affective disorders, such as recurrent endogenous depression, recurrent depression in which reactive factors were more important, and simple depression, the results were good in 60%, fair in 17%, and poor in 23%. In the patients with psychoneuroses, including tension states, obsessional states, hypochondriasis, and psychopathic personality, the results were good in 39%, fair in 22%, and poor in 39%. If the good and fair results are regarded as worthwhile, the results can be considered satisfactory in 75% of those with affective disorders, in 67% of the psychoneurotics, and in 40% of the psychopaths. The price paid in these patients for these results in terms of personality degradation was compared with that in a comparable series operated on by the same surgeon, in which the standard operation of prefrontal lobotomy was used. Undesirable changes occurred in only about 5% of patients undergoing rostral lobotomy, and these were attributed to poor selection of patients. They occurred in about 50% of those undergoing the standard lobotomy. There were insufficient data to show the effect of the new operation on intellectual efficiency and judgment, as only 6 of the 240 patients were originally in responsible positions. As far as less exacting work was concerned, many patients returned to skilled occupations. There were no data showing the effect of the operation on artistic ability. Pippard believes that lobotomy, including the modified form, while it may have a useful and sometimes valuable place in the treatment of mental illness, is destructive and potentially harmful and should only be performed after careful consideration and selection of cases.

**Viadril.**—Galley and Rooms (*Lancet* 1:990, 1956) have used Viadril (21-hydroxypregnane-3,20-dione sodium hemisuccinate) as the basic anesthetic in a series of 100 operations of all types. By trial and error it was found that 0.5% in an isotonic sodium chloride solution produced no venous thrombosis at whatever rate it was run in. A drip rate of 150 per minute was found to be the most convenient, producing drowsiness in 5 to 7 minutes, light sleep in 10 minutes, and unconsciousness in 15 minutes. After this time, pharyngeal reflexes are lost, in striking contrast to the effects of intravenous anesthetization with barbiturates or thiobarbiturates, so that direct laryngoscopy can be performed. Endotracheal intubation was sometimes possible with Viadril alone, after which nitrous oxide and oxygen (5:2 mixture) was adequate to maintain anesthesia for relatively simple procedures. More often, however, analgesics such as meperidine were added, as well as muscle relaxants. It was found that meperidine, tubocurarine, and succinylcholine chloride were incompatible with Viadril, producing a flocculent precipitate. They were therefore injected separately. Other preparations used in anesthetic practice, such as thiopental sodium, thialbutone, gallamine triethiodide, atropine, neostigmine, nalorphine hydrochloride, and methamphetamine, were compatible.

Viadril produced the same electroencephalographic changes as other intravenously given barbiturates, and in doses normally given did not appear greatly to affect either the depth or rate of respiration, however rapidly given. When controlled respiration was attempted, respiration was more readily taken over than with barbiturate anesthesia. One advantage of Viadril was the absence of laryngospasm when the vocal cords were stimulated and the absence of "bucking" under light anesthesia. Falls in blood pressure and a rise in pulse rate were more frequent with Viadril than with barbiturate anesthesia. With Viadril, however, the lowering of blood pressure often rectified itself, and in those patients in whom it did not, an intramuscular or intravenous injection of methamphetamine or a similar drug soon brought the blood pressure up to normal. Viadril appears to replace thiopental in any anesthetic sequence, but it has the drawback of slow induction, which is the result of its administration by intravenous drip in dilute solution, necessary to avoid thrombosis. Galley and Rooms were particularly impressed by the ideal operating conditions offered by Viadril and by the comfortable recovery period. This was considered better than that offered by any other anesthetic or anesthetic combination in common use.

**Preservation of Fish.**—Most fish eaten in Great Britain are caught between the Faroe Islands and the Arctic Circle and are a long time reaching the consumer. In spite of refrigeration, the taste is affected by the growth of bacteria on the scales. The standard method of preservation is to cool the fish with ice or to pack it in salt. Neither method prevents the growth of bacteria that cause spoilage. The Torry Research Station at Aberdeen has carried out trials on the use of chlortetracycline on the preservation of fish. The addition of 5 ppm of chlortetracycline to the salt in which the fish is packed in the trawling vessels improves the appearance, taste, and smell of the fish on landing, and may enable it to be kept for a week or more longer than usual. This enables trawlers to go further afield and to return a bigger catch; but, as the British law stands, this is illegal, as antibiotics must not be used for food preservation. There are strong arguments in favor of preserving fish in this way, and, if the trials are as successful as they appear to be at present, the law may be altered. The same problem is present concerning the protection of beer against foreign yeasts and organisms that affect its flavor by the addition of traces of polymyxin. The amount of chlortetracycline remaining in the fish after cooking is negligible; boiling destroys it, and frying leaves only a trace. There is, however, little information on the results of continued ingestion of even traces of antibiotics. The effect on animals, which are fattened by chlortetracycline, cannot be compared with long-term effects in man. It has, however, been stated that pathogenic strains of Escherichia coli may appear in calves that have received chlortetracycline to supplement their food. At present, research is directed to finding another antibiotic that is as effective as a preservative but that is more readily destroyed during the cooking of the fish.

**Mass Lightning Casualties.**—At the last Ascot race meeting a severe thunderstorm occurred while the meeting was in progress. A flash of lightning struck a tea stall and ran along the railings of one of the race stands. Many people were thrown to the ground, and one woman was electrocuted. Medical services were quickly organized, and 46 injured or shocked people were removed to hospitals. A report on 37 of the patients who were detained has been published by Arden and his co-workers (*Brit. M. J.* 1:1450, 1956). Twelve patients were rendered unconscious for some time, and two of these eventually died from head injuries. Several had retrograde amnesia for the event, while others remembered seeing the flash, and a few described a sensation of being struck at the back of the neck. The majority on regaining consciousness were unable to rise from the ground. Of the 37 patients, 26 complained of paresthesias, shooting pains down the limbs at the time of the accident, and a subsequent weakness of the limbs associated with tingling. In the early stages, examination revealed diminished reflexes, hypalgesia, and muscular weakness. Some symptoms persisted for several weeks. Most of the symptoms subsequently cleared, although in a few patients diminished hearing and emotional disturbances persisted. In no case was extensive necrosis present beneath the skin as is often seen with electrical burns. Fifteen patients received burns, only three of which were severe. The flash burns were characteristic, appearing as a brown discoloration of the skin involving only the surface layers. One patient had burns on the soles of the feet and no other injuries. Punctate full-thickness skin loss was the most common finding. The stands were protected by lightning conductors, and there were no injuries there. The site where most of the injured were standing was a metal-topped tent, in which were a number of people with rain-soaked clothes.

# CORRESPONDENCE

## CLOTTING VERSUS PROTHROMBIN TIME

*To the Editor:*—The thesis of the paper of G. A. Mayer and W. F. Connell (*J. A. M. A.* **161**:806 [June 30] 1956) that the clotting time is a more valuable guide to Dicumarol therapy than the Quick one-stage prothrombin time test is fraught with such danger that I deem it an obligation to submit this communication. The idea of substituting the clotting time for the prothrombin time is not new. Cheney in 1940 (*Am. J. M. Sc.* **200**:327) proposed the plasma clotting time to estimate hypoprothrombinemia and a careful survey of the literature might disclose other attempts, but, significantly, anticoagulant therapy continues to be controlled by the one-stage method in nearly all the hospitals of the world, presumably with success.

It might be well to recall that the clotting time was available long before the prothrombin time. Many of the older surgeons will remember how many patients with obstructive jaundice bled postoperatively, sometimes fatally, even though the laboratory had assured them that the clotting time was normal. It was not until Stanley-Brown, Bancroft, and I (*Am. J. M. Sc.* **190**:501, 1935) applied the one-stage method to the study of these patients and I suggested that the condition be treated by giving bile salts and vitamin K (*Am. J. Physiol.* **118**:260, 1937) that the enigma of cholemic bleeding ceased to be a problem and became only of historic interest. It is not surprising that several European students of coagulation have hailed the introduction of the one-stage method as the opening of "a new era in blood coagulation research." I mention this merely to emphasize how important it has been to free coagulation research from the dominance of the clotting time.

Of all the routine tests of hemostasis, the clotting time is among the most unreliable for establishing a bleeding state, even when meticulously standardized. The clotting time is normal or even decreased in thrombocytopenia, in spite of the fact that coagulation as measured by the prothrombin consumption test is exceedingly defective. It is also normal in mild hemophilia, in hemophilia-like diseases, and in stable-factor deficiency, in all of which conditions there is a frank bleeding tendency. Furthermore, the clotting time in normal individuals varies between 5 and 10 minutes when the blood is collected in a silicone-coated syringe with faultless technique. It might be added facetiously that, when one observes how venipunctures are done in many hospitals, one may abandon without hesitation standard deviations and coefficients of variation. I know of few hospital tests that contribute less to the safety of the patient than does the clotting time. Only two days ago I saw a hemophilic boy who had a tooth extraction without a prophylactic fresh plasma transfusion because his clotting time was found to be normal prior to extraction. As a result, he bled for four days and required eight transfusions. Since the clotting time in certain instances is not even a good screening test, there is little excuse for retaining it as a routine procedure. When a bleeding state is suspected, chief reliance should be placed on the prothrombin time, the prothrombin consumption time, and the bleeding time.

If the Quick one-stage prothrombin time test is to be compared with the clotting time or any other test, it should be carried out as I have described it and a value of 12 seconds for normal plasma should be obtained. Doctors Mayer and Connell report a range from 13 to 16 seconds. Unfortunately, they fail to specify what kind of thromboplastin they employ. The shortcomings that they attribute to my test may prove perhaps to lie in their technique. I hope therefore that their statement, "We have shown that, if the clotting time is within adequate limits, excessively prolonged prothrombin times may safely be disregarded," will be critically considered by investigators who have had extensive experience with Dicumarol therapy.

My associates and I have had the opportunity to study a large variety of hypoprothrombinemic states, and we have found an excellent agreement between the prothrombin time and the bleeding tendency on the basis of both experimental work and clinical observation. In congenital true hypoprothrombinemia, this relationship is particularly striking. It might further be added that an infant with a prothrombin time of 12 seconds can undergo major surgery with impunity, even though the prothrombin concentration as measured by the two-stage method may be only 25%. The reason for this is that the unmodified one-stage method (with acetone-dehydrated rabbit brain thromboplastin) measures the free prothrombin, which neither the two-stage nor any other prothrombin method determines.

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P. S.: Drs. Mayer and Connell have kindly sent me a copy of their letter in reply to the above communication. Contrary to their statement, I am familiar with Dr. Mayer's modified clotting time. We have not used his method, but the procedure we employ is as meticulously controlled. The remarks I made apply to all clotting time tests.

*To the Editor:*—Dr. Armand J. Quick has kindly sent us a transcript of his comments on our recent article "Effect of Bishydroxycoumarin (Dicumarol) on Clotting Time of Whole Blood" (*J. A. M. A.* **161**:806 [June 30] 1956). We fully agree that the commonly used clotting time techniques have no place in the control of Dicumarol therapy. In our study, we used a new method, which is highly reproducible and is devoid of the common sources of error inherent in previous tests. Unfortunately, Dr. Quick is unacquainted with our method, and his comments are directed at techniques of notorious inaccuracy. Since we completed our Dicumarol study, we have continued our work. We have now observed 310 patients, including 46 on long-term anticoagulant therapy, under treatment with Sintrom, Tromexan, and Indon (phenindione), as well as with Dicumarol, for a total of 13,500 treatment-days. Our therapy was directed entirely by our clotting time technique, the Quick test being performed also for comparison in the first 240 cases. Clinical results have been excellent; there have been no hemorrhagic accidents or thromboembolic complications while clotting time was within our therapeutic range. The discrepancy between our test and the Quick one-stage test as performed in our laboratories has been even more pronounced than in the Dicumarol series. In our patients on short-term therapy, we obtained on 250 treatment-days prothrombin readings of under 10% (from 70 to 90 seconds). These readings were nearly all obtained during the first 10 days of therapy, while the clotting time was only slightly elevated. Some of our patients treated with Sintrom showed such prolonged prothrombin times for from four to six consecutive days during this early phase of treatment (always associated with only slight clotting time prolongation). During this period, not a single hemorrhagic complication occurred.

It is difficult to overstate the importance of Dr. Quick's one-stage test in the field of coagulation research. It paved the way for many important discoveries in the field of the hemorrhagic syndromes and of liver disease, and it certainly has made possible the widespread clinical use of the orally given anticoagulants. However, it would not be correct to agree that "anticoagulant therapy continues to be controlled by the one-stage method in nearly all the hospitals of the world." Certainly, in many large European hospitals, it is no longer the sole test used. Dr. Nelson W. Barker, speaking at the Conference on Thrombosis and Embolism in Basel, Switzerland, in 1954 (Thrombosis and Embolism: Proceedings of the First International Conference, Basel 1954, edited by Th. Koller and W. R. Merz, Basel, Switzerland, Benno Schwabe & Co., 1955, p. 685) summarized the position for many: "It is not certain that this test is an accurate index of either the antithrombotic or potential hemorrhagic effect of the coumarin and indanedione compounds; in fact there is reason to believe that it may not always be so." Our own clinical studies, and a statistical analysis of our data, both published and unpublished, have convinced us that our standardized clotting time is more reliable in this regard than is the Quick one-stage test. Our thesis is that, if an anticoagulant drug

is actively inhibiting intravascular clotting, this effect will best be reflected by changes in the clotting tendency of whole unmodified blood in vitro and not by measuring the changes in one stage of the process.

That the one-stage prothrombin test is a valuable screening procedure in many hemorrhagic diseases goes without saying. We fully agree with Dr. Quick that ordinary clotting time methods should be abandoned for such purposes, since they are so inaccurate as to be completely misleading. However, this criticism does not apply to our technique. In studies on patients with potential bleeding tendencies, we have noted abnormal standardized clotting times in five patients. In these, more elaborate investigations demonstrated a deficiency in one or more clotting factors. One patient showed a prolonged clotting time after an apparently mild abdominal contusion; further study revealed extensive liver damage. Our test, then, is one of the procedures we now routinely use in the screening of patients with hemorrhagic disorders.

In the performance of the one-stage test, our laboratory employs fresh Difco-Bacto thromboplastin daily. We were aware of Dr. Quick's statement that the normal control should clot at 12 seconds. With the most meticulous care, we could not obtain this result. Our experience would seem to be that of most workers in this field. Our experience with the one-stage test is not of course as extensive as is Dr. Quick's. Nevertheless, one of us (W. F. C.) has used Dicumarol clinically for 10 years and the other (G. A. M.), for 9 years. Now that we have had over three years' experience with our new test, we would be loathe to control therapy with orally given anticoagulants with the one-stage prothrombin test alone. We are very glad that Dr. Quick has emphasized the complete uselessness and indeed the danger of relying on the conventional clotting time tests in the control of anticoagulant therapy. We do feel, however, that the procedure we are using is of high accuracy and of great value. We would be most grateful if other investigators might see fit to submit this procedure to a controlled study.

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## FOOD PUMP

*To the Editor:*—The idea expressed by the authors in the article entitled "Food Pump: New Approach to Tube Feeding," by Barron, Prendergast, and Jocz, which appeared in The Journal, June 16, 1956, page 621, is not new. The authors have overlooked a previous contribution on the same subject, entitled "Continuous Forced Feeding Pump, a New Approach to Nutritional Therapy" by C. C. Snyder, then of Galveston, Texas, now of Miami, Fla., published in *Plastic & Reconstructive Surgery* (8:73, 1951). As far as can be determined, these two pumps operate on about the same principle.

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## IMPLANTATION OF HUMAN TUMOR MATERIAL INTO VOLUNTEERS

*To the Editor:*—Commenting editorially on the proposed project dealing with implantation of human tumor cells into volunteering convicts in an Ohio penitentiary, the New York *Times* called it "a daring experiment" in "a new approach to cancer," reassuring its readers that "the experiment is fraught with no great risk—if cancer is incited it can be eradicated in its early stages at the site of injection." This approach is far from being new. As long ago as 1887, Cornil in France transplanted human tumors into the patients from whom these tumors had been excised. Similar experiments, some of them unpublished, have been since repeated by numerous surgeons and scientists. Not much has been learned from experiments in humans, except that, when tumors were implanted into the same individuals in whom they arose, they grew, whereas they did not grow when transplanted from one man to another.

Innumerable experiments on transplantation of tumors, however, have been carried out on mice, rats, and other laboratory animals. From these experiments information has been accumulated that probably is fully applicable to humans. On the basis of more recent experiments carried out on mice, the following possibilities have to be considered in reference to the proposed implantation of human tumor cells into the volunteering convicts: 1. It is most probable that the implanted tumor cells will fail to grow, and no tumors will develop at the site of the injection. The possibility cannot be excluded, however, that 20 or 30 years later, in the same individuals, and as a result of the inoculation, tumors may develop elsewhere in the body. 2. Another possibility that also has to be considered is that the individual inoculated with tumor cells will remain in good health himself, not showing immediate or delayed results of the injection. However, should this individual, after the injection, father children, some of such children, or such children's offspring, may develop a tumor.

Although these considerations are speculative, and are based only on data obtained on mice, they give, nevertheless, food for thought. It is apparent that any experiment dealing with the injection of live human tumor material into humans requires most careful evaluation of the risk involved. One cannot help wondering whether the possible scientific benefit of such an experiment will counterbalance the risk for the individuals concerned or their progeny.

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## THE ROCKEFELLER DIET

*To the Editor:*—I wish to make certain comments about obesity and dieting in addition to those that appeared in my letter to the Editor in The Journal, June 30, page 901. The formula diet developed at the Rockefeller Institute Hospital is but one of many diets that have been used for the treatment of obesity. We have found it to be a convenient schedule but do not claim any unique properties for it. Other clinics, incidentally, have used similar liquid diets for initial reduction of weight. We have made a careful review of all available nutritional literature and have found no evidence to suggest that a diet with the proportions of protein, carbohydrate, and fat naturally occurring in human milk can produce any lesion of the liver, blood vessels, or any other vital structure.

The dangers of low-protein diet referred to in my previous communication concern specifically the diet that is selected from an assortment of natural foods. The danger of unsupervised low-protein diet selected from natural foods lies in the fact that the balance between protein and other nutrients in such a diet depends on the judgment of each patient. Some people, wrongly thinking that protein had caused their obesity, might push restriction to an extreme and end up with a diet entirely different from the moderate diet that we tested in our clinic. The formula diet, on the other hand, does not present this hazard, since the proportions are fixed in the original mixture. The patients can take more or less formula, but the balance of nutrients remains unaltered.

The important consideration in any discussion of obesity treatment is that all reducing diets are merely symptomatic measures. A physician must regard an obese person as the victim of a chronic disease. When this fact is recognized and understood, then he can prescribe treatment—through diet and otherwise—to fit the condition. Any diet becomes a fad if it is claimed to solve the problem of obesity. An essential part of any sensible diet is a wise doctor trained to manage a chronic and, at the present time, incurable disease.

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# MEDICAL FILM REVIEWS

**Pediatric Anesthesiology:** 16 mm., color, sound, showing time 20 minutes. Prepared by M. Digby Leigh, M.D., Los Angeles. Produced in 1956 by Billy Burke Productions, Hollywood, Calif. Procurable on loan from E. R. Squibb & Sons, Division of Olin Mathieson Chemical Corp., 745 Fifth Ave., New York 22.

The film opens with a scene showing the differences in a well-oxygenated heart and a hypoxic heart. This is followed by a scene showing the method of detecting hypoxia through constant monitoring of the heart sounds through a precordial stethoscope. Succeeding scenes illustrate methods of avoiding hypoxia during pediatric anesthesia. In addition, anesthetic techniques for specific operations, ranging from the simple to the more complex, are demonstrated. The technique and procedures of anesthesia in infants and children are well covered. While intratracheal anesthesia has such an important role, it is unfortunate that it was so overemphasized in relation to open-drop ether in such procedures as tonsillectomy and abdominal surgery. There was also an overemphasis on the intravenous use of curare and pentothal. The photography is excellent, and the description of procedures and demonstrations is clear and well organized. This film is highly recommended for physician anesthesiologists, surgeons, surgical house officers, and senior medical students.

**Management of Streptococcal Infection and Its Complications:** 16 mm., black and white, sound, showing time one hour. Produced in 1955 by and procurable on loan from Wyeth Laboratories, 1401 Walnut St., Philadelphia, or American Heart Association Film Library, 13 E. 37th St., New York 16.

This is a Kinescope recording of a program presented by closed-circuit television on Feb. 24, 1955, as part of the postgraduate program of the American Academy of General Practice. After the opening remarks by Dr. W. B. Hildebrand, president of the academy, the following subjects are presented in the form of a symposium: Epidemiology of Streptococcal Infection, by Dr. L. A. Rantz; Complications of Streptococcal Infection, by Dr. J. D. Keith; Diagnosis and Treatment of Streptococcal Infection, by Dr. B. B. Breese; Prevention of Rheumatic Fever, by Dr. G. H. Stollerman; Summary, by Dr. C. H. Rammelkamp Jr.; and Applications to General Practice, by Dr. Keith Hammond. Although this film is rather long, it is an excellent review of the present status of the subject. All in all, it is a very good presentation. As a Kinescope recording, the photography is very good. It is highly recommended for internists, general practitioners, pediatricians, and house officers.

**The Clinical Manifestations and Treatment of Gout:** 16 mm., color, sound, showing time 29 minutes. Prepared by Elmer C. Bartels, M.D., Lahey Clinic, Boston. Produced in 1955 by the Worcester Film Corporation, Boston, for and procurable on loan from Sharp and Dohme Division, Merck and Company, West Point, Pa.

This subject is well illustrated by the use of clinical pictures and charts. The split-frame technique is used to give before and after demonstrations of patients; these are interesting and prove the effectiveness of the treatment. A comparison is made between gout, rheumatoid arthritis, degenerative arthritis, and gouty arthritis. The film deals with diagnosis, clinical manifestations, and present-day therapy of gout, with particular reference to Benemid. The important new developments of treatment, such as a low-purine diet, introduction of corticotropin (ACTH), and the use of colchicine, are emphasized. The author also emphasizes the differential diagnosis. This well-organized film is scientifically accurate. The photography is excellent, and the narration is very good. It is recommended for general practitioners, medical students, residents, and interns.

**Liver Biopsy with Vim Silverman Needle:** 16 mm., color, sound, showing time 18 minutes. Prepared by Charles H. Brown, M.D., and Arthur M. Clark, M.D., Cleveland Clinic. Procurable on loan from Charles H. Brown, M.D., the Cleveland Clinic, 2020 E. 93rd St., Cleveland 6.

This film emphasizes the value of liver biopsy in making an accurate diagnosis of disease of the liver. The technique of using the Vim-Silverman needle is very carefully demonstrated, with both the transthoracic and abdominal methods shown. The author lists the indications for liver biopsy and shows photomicrographs of specimens that can be obtained by this technique. He also lists the contraindications and the complications that have occurred in approximately 800 biopsies. It is felt that this film minimizes the danger of complications that might occur in the hands of untrained personnel. The photographic technique and quality are good.

**Thiersch's Operation for Anal Incontinence and Minor Degrees of Rectal Prolapse:** 16 mm., color, sound, showing time 18 minutes. Prepared in 1954 by and procurable on loan from Vincent A. Cianci, M.D., 54 Pocasset Ave., Providence 9, R. I.

The purpose of this report-type film is to introduce Dodd's modification of the Thiersch operation for certain types of rectal prolapse. Four cases are shown—one with complications—that demonstrate findings before operation and results obtained after operation. X-ray studies show the wire in position after surgery. The last case shown is a surgical demonstration of the modified operation. Indications for the operation, the course, and subsequent treatment, along with the complications that might be expected and their treatment, are also discussed. The surgery is well done. The surgical photography is satisfactory, although better lighting would have improved the film in some places. Several of the preoperative views were taken from still color slides. The narration by the author is adequate. The film would be suitable for general practitioners and surgeons interested in the Dodd modification of the Thiersch operation.

**The Human Brain:** 16 mm., black and white, sound, showing time 10 minutes. Produced in 1954 by Encyclopaedia Britannica Films, Inc., in collaboration with Nathaniel Kleitman, Ph.D., Chicago. Procurable on rental or purchase from Encyclopaedia Britannica Films, Inc., 1125 Central Ave., Wilmette, Ill.

The film reviews the structure of the brain by an animated sequence that explains briefly the functions of the brain stem and cerebellum. Then it takes up the cerebrum, which is the organ that controls learned and conscious behavior. In a live-action sequence, the film describes how the cerebrum develops with an individual's growth from birth to adulthood. With a driver in a traffic situation used as an example, the thinking process performed by the cerebrum is described. This film, in a suitably elementary manner, describes the function of the brain and also shows some of the principal anatomic pathways for carrying out these functions. It is essentially accurate and would be useful at the 9th or 10th grade level.

# MEDICAL LITERATURE ABSTRACTS

## INTERNAL MEDICINE

**Endocrine Activity in Anorexia Nervosa.** R. W. Emanuel. J. Clin. Endocrinol. **16**:801-816 (June) 1956 [Springfield, Ill.].

Eight female patients between the ages of 15 and 26 years and one 20-year-old man with anorexia nervosa in whom symptoms of the disease had persisted for a minimum of five years were studied, and two women aged 23 and 24 years who had recovered from anorexia nervosa served as controls. An attempt was made to determine the activity of the anterior pituitary, adrenal cortex, thyroid, and ovaries. Estimation of the urinary excretion of the follicle-stimulating hormone together with the insulin-tolerance test were used for the assessment of anterior pituitary function. The urinary 17-ketosteroid excretion before and after administration of corticotropin (ACTH), estimations of the serum electrolyte levels, a simplified water excretion test, and the Robinson-Power-Kepler test were used for the assessment of adrenocortical activity. Measurements of the basal metabolic rate, radioactive iodine studies, and estimations of the serum cholesterol level were used for the assessment of thyroidal activity. Ovarian activity was studied by examination of vaginal smears. Results suggested decreased activity of the anterior pituitary and an associated reduction in the function of the adrenal cortex, thyroid, and ovaries. Normal activity of these glands was observed in the two control patients who had recovered. This suggests that no irreversible change had occurred during the course of the disease.

**Ten Cases of Rheumatoid Arthritis Treated with PAS and Other Measures over a Two-Year Period.** B. Haynes. M. J. Australia **1**:692-696 (April 28) 1956 [Sydney, Australia].

Haynes presents observations on 10 patients with rheumatoid arthritis receiving a standard treatment consisting of rest, the prophylactic administration of sulfadiazine, and the exhibition of aminosalicylic acid (PAS) and gold. The aminosalicylic acid was given in doses of 0.5 or 1 gm. every four hours, and this regimen has been continued for from 14 to 31 months. The daily dose of aminosalicylic acid ranged from 3 to 6 gm., the usual and minimum dose being 3 gm. per day. There were no toxic symptoms, and it was never necessary to suspend administration of the drug. All 10 patients are still alive; 8 are back at their usual occupations, and 7 of these 8 are free of pain or disability. Five patients have normal blood sedimentation rates. Eight patients have a complete, pain-free range of movement in every joint. Subluxation, ulnar deviation, or hyperextension has not developed in any of the patients. No gold had been given to five of the patients for a year, and three had never received gold.

Observations on these 10 patients and on 60 others receiving similar treatment convinced the author that aminosalicylic acid has an antirheumatic action similar to that of other salicylates, such as sodium salicylate and aspirin. Its action is slower than that of sodium salicylate or aspirin, but more prolonged. The author feels that the slower action of aminosalicylic acid is an advantage in rheumatoid arthritis. While this drug is not a "cure" for rheumatoid arthritis, the cases reviewed illustrate that, in combination with rest, the prophylactic administration of sulfonamide drugs, psychotherapy, and prolonged supervision, it can prevent the development of crippling deformities and return the patient to normal or nearly normal life in a reasonable period of time. An assessment of the therapeutic response according to the criteria of the American Rheumatism Association is given in a table. Five patients, possibly six, achieved a complete remission—grade 1 therapeutic response. The remainder experienced major improvement—grade 2 therapeutic response.

**Effect of High Doses of Vitamin $B_{12}$ on Leukopenia Caused by Nitrogen Mustards.** L. Masetto and M. Butto. Gior. clin. med. **37**:204-216 (Feb.) 1956 (In Italian) [Bologna, Italy].

The authors studied the effect of vitamin $B_{12}$ on 15 patients who were being treated with nitrogen mustard for tuberculous lymphadenitis, Hodgkin's disease, histiocytoma, reticulosarcoma, leukemia, and polyarthritis. When treatment with vitamin $B_{12}$ was started, the patients had received 14 mg. of nitrogen mustard, and this was continued up to 28 mg. The dose of vitamin $B_{12}$ was 1,000$\gamma$ per day up to a total of 12,000$\gamma$. A second group of 15 patients undergoing treatment with nitrogen mustards was not given vitamin $B_{12}$. Leukopenia was controlled with several blood transfusions. A control group of 15 normal people was given vitamin $B_{12}$ for 12 days in order to determine its effect on leukocytes. Lethal doses of nitrogen mustard cause severe aplasia of all hemopoietic tissues. Mitosis and severe alteration of lymphocytes takes place in the lymphatic tissue six to eight hours after the intoxication. Extensive destruction of the lymphatic elements, e.g., the lymph nodes of the thymus, of the spleen, and of the intestines, follows within 24 hours. Leukopenic effects follow a slight and transitory increase of the leukocyte count noticed shortly after the nitrogen mustards are given. The lowest values are observed 12 to 14 days after the beginning of the treatment. Lymphocytopenia is noted first; it increases for a few days. Leukopenia, which becomes more pronounced later, is caused by the decrease of the gramulocytes, which may reach such low values that agranulocytosis may develop. Three days after combined treatment with vitamin $B_{12}$, the number of white cells increased to 6,750. The maximal number of 7,035 was reached after the sixth day. During the following days of treatment the values oscillated around the same numbers. On the last day of treatment they were at 6,975. After a week their number was close to the number of leukocytes present before the treatment. A second effect of vitamin $B_{12}$ is to promote leukopoiesis after the therapy has been terminated. The mechanism of action of vitamin $B_{12}$ is still obscure. Its effects, however, are definitely leukostimulating. Inconvenient side-effects did not result from the use of vitamin $B_{12}$.

**The Problem of Arsenic in American Cigarette Tobacco.** H. S. Satterlee. New England J. Med. **254**:1149-1154 (June 21) 1956 [Boston].

Analytic data are presented to show that the arsenic content of various popular brands of American cigarettes averaged 12.6 mcg. per cigarette as sold between 1932 and 1933, and that, according to the data published between 1950 and 1951, the arsenic content increased to 42 mcg. per cigarette, or more than 300% in 20 years. This increase is attributed to the use of arsenical pesticides on American tobacco plantations. Statistics are cited to show that cigarette smoking, as indicated by production and sales, increased more than 300% in the same 20 years and that the death rate from cancer of the lung in the United States rose 200% in women and 600% in men during the 20-year period ending in 1954. These data are regarded as relevant to one phase of a public-health problem that is concerned with the wider question of cancer produced by arsenic and also with the closely related problem of the increasing amount of air-borne arsenic in urban atmospheres that are polluted by arsenic derived from petroleum-fuel combustion, both indoors and outdoors, and by air-borne

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The place of publication of the periodicals appears in brackets preceding each abstract.

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arsenical detritus from the abrasion of synthetic-rubber tires and tarred or oiled roads. Reliable data in this field are lacking.

Analytic data on graded filtrations of air-suspended particles show that the arsenic content of such particles is unstable and that it varies inversely with particle size. Strict precautions are needed to avoid errors because of losses of volatile substances in assays of such material. An improved method is recommended for indoor collection and immediate extraction of arsenic in acid solution of small volumes of air when microdeterminations of "background arsenic" in any situation are made. When the pulmonary excretion of arsenic, especially among city dwellers, is considered, it seems possible that excessive inhalation of arsenical cigarette smoke, aggravated by arsenical pollution of urban atmospheres, serves to obstruct or render stagnant the bronchial current of arsenic excretion and so favors induction of bronchogenic cancer in cigarette smokers. Presumably, this might occur more frequently in men than in women, since men lack the safety valve of the periodic discharge of excessive arsenic from the blood stream through the uterine mucosa and cervix uteri during menstruation. Special techniques for employing radioarsenic are regarded as promising implementation for clarifying the problem of air-borne arsenic and smoke-borne arsenic in relation to lung cancer occurring in cigarette smokers and in others who live in air-polluted industrial cities.

**Jaundice Associated with the Administration of Chlorpromazine.** J. Gambescia, J. Imbriglia, P. Galamaga and W. Winkelman. Gastroenterology **30**:735-751 (May) 1956 [Baltimore].

Jaundice developed in 8 of 700 patients who received chlorpromazine orally. The experiences with hepatic disorders during chlorpromazine therapy described in this paper were accumulated in observations on these 8 patients and in studies on 230 of the 700 patients who were followed up with repeated physical examinations and liver function tests. The incidence of an overt icteric state after the continuing oral administration of chlorpromazine in this series was 1.1%. What part nonicteric subclinical hepatic impairment contributes to the incidence is not clear. While there is reason to expect that a nonicteric phase is represented, the exact definition of this type of response is not crystallized. In the patients who were receiving chlorpromazine, abnormal liver function tests were obtained in 12 in the absence of icterus, but in 4 the tests were abnormal even before the initiation of the project. In eight others, the authors were unable to evaluate the status of the tests prior to the institution of chlorpromazine therapy. Four of the 12 patients demonstrated a transiency in the hepatic tests that could be evidence of chlorpromazine toxicity. The incidence did not exceed what one could expect in the general adult population. Hence, it would not be justified to interpret this as evidence of subclinical hepatic impairment secondary to chlorpromazine therapy.

The authors conclude that the lesion produced by chlorpromazine is due to hypersensitivity. If this hypersensitivity is not overcome, it may be reproduced by a single therapeutic dose of chlorpromazine. The end-organ of this hypersensitivity response is the cholangiole (bile canalicus). The lesion may be identifiable by liver biopsy and can be distinguished from viral hepatitis. The use of sodium dehydrocholate is contraindicated in the presence of this lesion. The use of corticotropin and cortisone has an apparently beneficial effect, possibly by suppressing the local changes associated with the hypersensitivity response, but these agents are not to be regarded as curative; moreover, the sensitivity response initially may be of such magnitude as to overcome their suppressive ability. When corticotropin and cortisone are chosen as therapeutic agents, they should be used for at least 30 days because shorter periods of treatment may be followed by relapse. When chlorpromazine has once sensitized a patient, its renewed administration is inadvisable. While the biochemical picture described is that of hyperbilirubinemia and hyperphosphatasemia, slight abnormality of the flocculation tests need not be taken as evidence against the existence of chlorpromazine hepatitis. Clinical jaundice is not a necessary accompaniment of this illness, and such signs as fever, an elevated phosphatase level, and eosinophilia may be the only indications of its presence.

**Experiences with Meticorten and Meticortelone.** J. H. Solem and O. Rømcke. Tidsskr. norske lægefor. **76**:321-324 (May 15) 1956 (In Norwegian) [Oslo, Norway].

Meticorten (prednisone) and Meticortelone (prednisolone) are active antirheumatic and anti-inflammatory steroids. The impression of the results of their application in 20 patients with various diseases is that these substances seem to be at least four or five times as effective as cortisone. The daily dosage was usually 15 mg. daily, at the most 30 mg. daily. Subjective and objective improvement was seen in the treatment of rheumatoid arthritis, ankylosing spondylitis, bronchial asthma, acute hepatitis, idiopathic steatorrhea, and Boeck's sarcoid. The introduction of Meticorten in the treatment of two patients with an adrenogenital syndrome showed its superiority in suppressing excessive 17-ketosteroid excretion. Two patients with polyarthritis in whom cortisone-fastness had developed reacted satisfactorily to Meticorten. No edema formation was demonstrable. The most usual side-effect was increased appetite. Rounded facies was observed in 12 cases.

**Significance of Subcutaneous Infusion of PAS in the Treatment of Pulmonary Tuberculosis.** Dr. A. von Oppen. Ztschr. Tuberk. **108**:158-162 (No. 3 and 4) 1956 (In German) [Leipzig, Germany].

The use of aminosalicylic acid (PAS) has proved important in the treatment of tuberculosis by increasing the effect of streptomycin or isoniazid and by retarding the development of resistance to these drugs. Oral administration of aminosalicylic acid has, however, certain disadvantages, such as the development of gastrointestinal disturbances, difficult resorption when the intestinal function is impaired, and the aversion of the patient to oral intake. Intravenous infusion has been tried, but this, too, has certain disadvantages. This paper is concerned chiefly with subcutaneous infusion, which was tried by American authors (Bloch and Barclay) in 1949. The apparatus for infusion consists of bottles like those used for blood transfusions or for infusion of isotonic sodium chloride solution. Because a solution of aminosalicylic acid is highly sensitive to light, the bottles are covered with a black cloth. The middle or upper third of the anterior aspect of the thigh is the best site for subcutaneous administration, because infusion into the external surface is often accompanied by severe pain, and infusion into the internal surface sometimes results in damage to the femoral vessels.

The time required for an infusion usually varied between two and one-half and four hours. The therapeutic concentration in the blood is usually reached within 30 minutes, attains a maximum after 3 hours, and after that subsides slowly so that the concentration is still adequate after 12 hours. More prolonged infusions did not noticeably prolong the duration of action. It appears that the concentration of the drug within the blood is dependent less on the rapidity of the infusion than on the size of the depot. Usually, one subcutaneous infusion of 12 gm. of aminosalicylic acid is given daily. In urgent cases, a second infusion of 12 gm. may be given in the afternoon, approximately from six to eight hours after the start of the first infusion. Patients nearly always prefer the subcutaneous to the intravenous or oral method of administration. It is necessary, however, to give detailed attention to certain technical factors: that the infused solution has the correct concentration, that pyrogen-free water is used, that the solution is protected against decomposition, that the cannula is in the proper position, and that the rate of inflow is properly controlled. Careful attention to these details will prevent undesirable secondary effects even with routine daily administration of the solution of aminosalicylic acid.

**Thrombocytopenic Purpura in Infectious Mononucleosis.** E. Pader and H. Grossman. New York J. Med. **56**:1905-1910 (June 15) 1956 [New York].

Twenty-one cases of thrombocytopenic purpura occurring in patients with infectious mononucleosis have been collected from the literature, and two additional cases are described in a 17-year-old girl and a 20-year-old man. In most of the cases from the literature, the usual symptoms of mononucleosis, such as sore throat, fever, malaise, enlarged tender lymph nodes, and headache, were present before or during the occurrence of abnormal

bleeding. None of the symptoms usually associated with infectious mononucleosis were present in the 17-year-old girl before the onset of purpura. Multiple small purpuric areas were present over the entire body, mostly on the face, neck, trunk, and lower extremities. She received intramuscular injections of penicillin, and extensive ecchymoses appeared at the sites of the injections on the left arm and both buttocks. Physical findings usually associated with infectious mononucleosis were lacking except for moderate splenomegaly. Thrombocytopenic purpura thus occurred as the only manifestation of infectious mononucleosis. The patient's course was entirely benign; the purpuric and ecchymotic areas faded gradually, and no fresh bleeding appeared. She received no therapy except iron for mild hypochromic anemia. In the male patient, the clinical picture and the typical appearance of the Downey cells in the peripheral blood established the diagnosis of infectious mononucleosis. In contrast to the case of the girl, the only manifestation of a bleeding tendency was the presence of petechiae on the palate and uvula.

It is known that latent idiopathic thrombocytopenic purpura may be activated by acute infection, but none of the patients reported on had a previous history of hemorrhagic tendencies, and they showed complete clearing of bleeding tendencies and thrombocytopenia with cessation of the infectious mononucleosis. This is to be considered as strong presumptive evidence that the thrombocytopenic purpura was secondary to the infectious mononucleosis. The occurrence of a significant thrombocytopenia with infectious mononucleosis, even in the absence of hemorrhagic phenomena, is rare. A review of the cases of 300 consecutive patients with infectious mononucleosis from the records of the Mount Sinai Hospital in New York City revealed that thrombocytopenic purpura developed in only 2 patients (those reported by the authors). The incidence of thrombocytopenic purpura with infectious mononucleosis, therefore, appears to be approximately 0.7%. In the purpura associated with infection such as mononucleosis, the infectious agent combines with the patient's platelets to form an antigen. In some patients, depending on individual susceptibility, this antigen may lead to formation of antibodies (humoral factor), which may destroy platelets and possibly injure megakaryocytes. Further experimental studies will be needed to verify this concept, which represents an attractive hypothesis.

**Hypercalcemia and Renal Injury in Sarcoidosis.** B. Kuhlbäck and W. Nyberg. Finska läk.-sällsk. handl. **98**:181-185 (No. 2) 1955 (In Swedish) [Helsingfors, Finland].

The cause of hypercalcemia in patients with sarcoidosis is not fully understood. Investigations by Anderson and associates indicate that the increased calcium content in the serum depends partly on increased bone destruction and partly on greater calcium absorption from the intestine. Cortisone inhibits both these factors. Vitamin D increases calcium absorption from the intestine and in this respect exerts an antagonistic action toward cortisone. Sarcoidosis therefore seems to be a condition characterized by increased sensitivity to vitamin D. Renal injury in sarcoidosis probably depends in many cases on hypercalcemia with resulting nephrocalcinosis. In the author's case of sarcoidosis with hypercalcemia and slight renal injury, the serum calcium values decreased after cortisone treatment and the renal function returned to normal.

**Value of Treatment in Reiter's Disease.** W. Fowler and G. H. Knight. Brit. J. Ven. Dis. **32**:2-6 (March) 1956 [London, England].

Clinical syndromes consisting of nonspecific urethritis, conjunctivitis, and arthritis may occur either in association with bacillary dysentery or in the absence of any signs or recent history of intestinal disorder, and it has become customary to refer to both syndromes as Reiter's disease or Reiter's syndrome. The etiology of the disease is obscure, and opinion is divided as to whether it has one or many causes and whether there is any effective treatment. The authors review the effects of various treatments in 73 male and 2 female patients, none of whom had a recent history of dysentery or gonorrhea. Nonspecific urethritis and acute hydrarthrosis of at least one joint were present in every patient. Ocular and cutaneous manifestations were each present in 22, but only in 5 patients were both present. Five patients received no treatment other than rest in bed, and the remaining 70 were given one or more types of systemic therapy. The duration of the illness was no shorter in those receiving treatment than in the five untreated patients. The authors found no evidence that any form of therapy has any influence upon the course of the illness.

Fever therapy was no more effective than the antibiotics when given at the start of the illness, and, when it is considered that it is usually given after the illness has been present for some time and over a period of from 12 to 20 days, it is seen that the slightly higher recovery rate after fever therapy is of no significance and that there is no proof that this is an effective treatment for Reiter's disease. There is no proof that cortisone or antihistamines alone or combined with streptomycin shorten the duration of the illness, although at times these hormones can produce temporary suppression of symptoms and signs. The results of gold therapy likewise did not suggest any beneficial effect. The salicylates seemed to have no more than an analgesic effect.

**Rothmund's Syndrome: Two Cases.** A. González Ochoa and E. Zajur Dip. Gac. méd. México **85**:721-734 (Oct.-Nov.-Dec.) 1955 (In Spanish) [Mexico, D. F., Mexico].

Rothmund's syndrome (ectodermal dysplasia, ocular lesions, mainly cataract, and hypogenitalism) is rare. The cutaneous lesions appear in infants between the ages of 3 and 6 months, with atrophy, telangiectasis, and regions of pigmentation. Bilateral cataract is either congenital or appears in the children when they are between the ages of 3 and 7 years. In some cases there is dyskeratosis or degeneration of the cornea. Hypogenitalism and other endocrine disorders are always present. In some cases there is a marked scarcity of the eyelashes and the eyebrows, lack of hair, acromicria, atrophy of the fingernails and toenails, mental deficiency, and saddle nose. The two cases reported by the authors are the 24th and 25th in the literature. The patients, two sisters, 15 and 9 years old, presented the typical syndrome. They were greatly undersized. Bilateral cataract developed in the 15-year-old girl when she was 6 years old. The syndrome was complete with cutaneous lesions and hypogenitalism, as shown by laboratory tests. The 9-year-old patient had acromicria and deformities of the fingers. Because of her age, data on hypogenitalism could not be obtained. The parents were not related. Both patients are greatly retarded mentally.

**Some Effects of Severe Chronic Anaemia on the Circulatory System.** W. Whitaker. Quart. J. Med. **25**:175-183 (April) 1956 [Oxford, England].

The purpose of the present study was to investigate the circulatory system of patients with severe chronic anemia by comparing observations made before and after treatment and to assess the significance of abnormal features. Particular attention was given to abnormalities of the renal circulation, and these abnormalities were considered in relation to heart failure complicating anemia and to hypertension appearing after treatment. Of the 10 patients studied, 8 had macrocytic anemia of the Addisonian type, one had carcinomatosis due to breast cancer, and the 10th had chronic gastrointestinal bleeding. The cardiac output fell with treatment in all cases, except for one patient whose initial hemoglobin level was greater than 7 gm. per 100 ml. The high cardiac output in the anemic patients was not related to an abnormally high oxygen consumption but, together with increased removal of available oxygen, provided a normal amount of oxygen for the body. Increased stroke-volume, rather than tachycardia, appeared to maintain the high cardiac output. There was no direct relation between fall in cardiac output and fall in right atrial pressure with treatment. A high cardiac output appears to be independent of elevation of the venous pressure in patients with anemia. The anemic patients had high pulse pressures and low diastolic blood pressures. After treatment, three patients had abnormally high arterial blood pressures, and it was concluded that severe anemia either masked hypertension or predisposed the patients to it.

An over-all vasodilatation was found to be associated with renal vasoconstriction. This selective alteration in peripheral vascular resistance produced an unusual distribution of blood, with an abnormally small fraction of the cardiac output flowing to the kidneys. The renal fraction of the cardiac output was reduced

enough to cause the absolute renal blood flow to be abnormally low, even though the cardiac output was raised. Renal anoxia seems to be an inevitable sequel to a low renal blood flow in anemia and has been discussed as a possible cause of salt and water retention and of arterial hypertension after treatment. The change in the hematocrit value prevented the striking alterations in renal blood flow from markedly affecting the renal plasma flow. The glomerular filtration rate was affected similarly to the renal plasma flow. It was impossible to relate the disappearance of congestive heart failure, which occurred in four patients with treatment of the anemia, to any change in tubular load. There was no constant alteration in the filtration fraction with treatment, a fact that showed that renal vasoconstriction did not predominantly affect either the afferent or the efferent arteriole.

**An Investigation of Prolonged Insulin Resistance in a Case of Diabetes Mellitus.** J. R. Presland and C. M. Todd. Quart. J. Med. 25:275-284 (April) 1956 [Oxford, England].

The patient was an obese 57-year-old woman whose diabetic condition was discovered in 1940. At that time, glycosuria was controlled with 40 units of insulin a day. After 12 years without insulin therapy, the patient was given 35 units daily during the treatment of a furuncle on the hand. A month later insulin resistance developed and increased until 500 units daily was insufficient to control the diabetic state. She was hospitalized in diabetic coma that was controlled in 24 hours by the administration of 3,000 units of insulin and 7 liters of isotonic sodium chloride solution. Recovery from coma was followed by several episodes of infection accompanied by a spectacular rise in the insulin requirements. The diabetic state was ultimately controlled at the level of 600 units of insulin per day, and this requirement persisted until the patient's death from coronary complications.

The novel feature of this case was the presence of a large amount of insulin in the blood. Although the insulin was not assayed, the experiments indicated that the circulation might contain about 1,000 to 1,500 units and the total extracellular fluid possibly 3,000 to 4,000 units at the height of the resistant state. The insulin was either free or reversibly bound to plasma protein. It was capable of exercising its normal effects, because it exerted a characteristic hypoglycemic action in the rat and stimulated the formation of glycogen in isolated rat muscle. When insulin was withheld from the patient, the hypoglycemic activity of the serum diminished almost to the point at which it was undetectable in the rat preparation. Experiments with protein fractions of the serum showed that the insulin was associated with the $\beta$-lipoproteins. There was evidence that insulin resistance was due not to inadequate absorption or to excessive inactivation of insulin but to defective response in the tissues. The plasma-protein spectrum changed as the insulin requirement diminished.

**The Finger-Nails in Chronic Hypoalbuminaemia: A New Physical Sign.** R. C. Muehrcke. Brit. M. J. 1:1327-1328 (June 9) 1956 [London, England].

The fingernails were examined in 250 healthy adults, in 500 patients with normal serum albumin levels, in 31 patients with the nephrotic syndrome, and in 34 patients with hypoalbuminemia from other causes. Observations were also made of the fingernails after infusion of salt-poor human serum albumin, after corticotropin and cortisone therapy, and after an increase of serum albumin noted after spontaneous diuresis. Abnormal changes were observed consisting of the appearance of paired narrow white bands in the fingernails of patients with serum albumin levels persistently below 2.2 gm. per 100 cc. These two transverse bands ran parallel to the lunule. They were not palpable, did not indent the nails, and were separated from each other and from the lunules by areas of normal pink nail. These bands were not found in any healthy person or in patients with serum albumin levels above 2.2 gm. per 100 cc. This finding is unique, because it reflects a specific biochemical abnormality, i. e., chronic hypoalbuminemia. Although white bands are most often seen in patients with the nephrotic syndrome, they are not specific for any one disease state. In the patients studied, the paired white bands did not regress with vitamin therapy, but they disappeared when the serum albumin was maintained above 2.2 gm. per 100 cc. with the aid of intravenous administration of salt-poor human serum albumin or cortisone and corticotropin therapy. A spontaneous rise in serum albumin also caused the white bands to disappear.

## SURGERY

**Symphysis of the Pericardium: Results of Pericardectomy with Reference to 80 Cases Observed at the Lyons Center of Cardiovascular Surgery.** P. Santy, P. Marion, J. Gravier and P. Charnay. Semaine hôp. Paris 32:1883-1890 (May 30) 1956 (In French) [Paris, France].

Study of the results obtained by pericardectomy in 80 patients subjected to this operation since 1937 shows the importance of distinguishing between the three well-defined anatomoclinical types of constrictive pericarditis. The first, or calcific, type with or without an aseptic pus formation usually occurs in middle age and is hardly ever found in persons aged less than 20 years. The earliest symptoms in the 32 patients with pericarditis of this type dated back an average of five years before the operation was decided on. The second type, or fibrous constrictive pericarditis, was found in 23 patients, one of whom had a genuine cold abscess of the pericardium. These patients averaged 25 years in age, and, since their earliest symptoms dated back only three years, not only were the patients younger but the disease was also more recent than in the case of calcific pericarditis. The third type, or subacute epicardial constrictive pericarditis, was present in 26 patients averaging 26 years in age. The duration of the symptoms in these patients was measured in months, not years, and the operation was performed, on an average, eight months after the onset of the initial acute pericarditis. Tuberculosis is unquestionably an underlying cause of constrictive pericarditis in many cases, especially of the fibrous and subacute varieties.

The 16 postoperative deaths in this series occurred within the first 19 days, 6 of them before the end of the 3rd day, and were due chiefly to cardiorespiratory failure (5), progressive anoxia (6), or suppurative mediastinitis (3). Analysis of the authors' statistics shows that the operation is benign in subacute epicardial pericarditis; only 8% of the patients with this form of the disease died. Patients with calcific pericarditis, on the other hand, had a mortality of 28% (40% for those with complete arrhythmia), as compared with 20.5% for those with the fibrous type. One of the most important factors governing the operative risk is that of age: in patients under 20, the rate was 11%; in those aged 20 to 40 years, it was 17%; and in those over 40, it was 33%. Another factor of importance is the duration of the disease: the more recent forms carry a lesser operative risk than those of long standing. The frequency with which the postoperative deaths are due to pleuropulmonary causes suggests that reduction of the operative mortality will depend largely on careful attention to the patient's pleuropulmonary status before, during, and after the operation.

The results obtained in these patients were excellent: 38 of the 56 with a follow-up of more than one year were cured, that is, they were able to resume their normal activities completely and all signs of hypertension on the right disappeared. Great improvement was shown by six patients who had excellent subjective results, often considering themselves cured, and who were able to resume normal activity, although on examination they were found to have enlargement of the liver and other sequelae of hypertension on the right. These patients fall into two groups: those in whom the results, though imperfect, must be accepted as adequate because the risk of reoperation would outweigh any possible benefit to be derived from the procedure, and those in whom reoperation is advisable and may lead to a complete cure. Three of six patients in whom a second pericardectomy was performed were apparently cured at follow-up one year later, and three others with a shorter follow-up were progressing favorably. The three late deaths (eight months, three years, and two years or more after operation) were due to tuberculous meningitis in one patient, who had been completely

cured of his cardiac condition, and to purulent pericarditis and purulent pleurisy in the other two, whose condition had merely been improved. Improvement of the late results depends on careful determination of the indications for operation and especially the time at which it should be performed, choice of procedure, and reoperation when necessary. The complete long-term cures obtained by reoperation in three patients brought the total number of cures in this series to 41, or 76%.

**Pulmonary Tuberculoma.** W. Klinner. Arch. klin. Chir. **281**:537-546 (No. 6) 1956 (In German) [Berlin, Germany].

The term tuberculoma was formerly restricted to sharply defined caseous foci in the brain and the liver, but, since pulmonary resections have been carried out, the term tuberculoma has been extended to similar lesions in the lung that on roentgen examination appear as solitary round shadows. The lesion that is now designated as pulmonary tuberculoma was formerly generally referred to as a round infiltration or a round focus. The term pulmonary tuberculoma should be restricted to large, definitely circumscribed, caseous necroses in which the alveolar framework is still demonstrable. On the basis of studies on 40 resected specimens, the author discusses the structure as well as the pathogenesis and development of the pulmonary tuberculoma. There exist two groups. The one group has a necrotic nucleus surrounded by one or several fibrocaseous layers and a capsule of connective tissue. The second group consists of a uniformly caseous area of necrosis separated from the healthy lung tissue by specific granulation tissue. Both groups have in common the fact that they are connected with a bronchus, and this bronchial outlet explains the tendency to fusion and to breakdown. This breakdown is greater in the second group of tuberculomas, which have less fibrous tissue, than in the first group. Conservative treatment of pulmonary tuberculoma usually fails. The author recommends lobar or segmental resection. Mere enucleation or wedge excision is not advisable. Of 40 patients operated on in the course of four years, 36 can be regarded as cured.

**Phenylbutazone in Treatment of Pleurisy After Thoracotomy.** E. Castro Fariñas and R. García Zozaya. Rev. clín españ. **60**:365-374 (March 31) 1956 (In Spanish) [Madrid, Spain].

Thoracotomy was performed in 15 patients with mitral stenosis, in 2 patients with arterial hypertension for a thoracic sympathectomy, and in a 7-year-old child for pulmonary stenosis. Drainage was maintained for two or three days after the operation in the 15 patients with mitral stenosis who had a valvuloplasty. Residual pleurisy developed in two or three days after the operation. The treatment consisted of intramuscular injections of phenylbutazone in daily doses of 0.60 gm. for four consecutive days. The drug was also administered to the child in daily doses of 0.25 gm. for four consecutive days. The treatment was repeated after an interval of one day. During treatment, the patients were on a salt-free diet and were given intravenous injections of a 40% levulose solution in repeated routine doses. Satisfactory results were obtained in 16 cases. None of the patients showed symptoms of cutaneous intolerance or digestive, hematic, neurological, or urologic disorders. Pain and fever rapidly subsided; the roentgen picture of the chest became normal; and the patients had an uneventful convalescence of from 9 to 12 days. The treatment had to be discontinued in two patients, in one because of intolerance shown by dizziness and vomiting and in the other because of inefficacy of the drug. In both cases the treatment was changed to thoracentesis and antibiotics. The patients were hospitalized for 15 and 35 days respectively. The authors conclude that phenylbutazone is of value in the treatment of post-thoracotomy pleurisy, with satisfactory results in 90% of the cases. The symptoms are rapidly controlled; the disease clears promptly and the period of hospitalization is shortened. No intolerance to the drug was manifested when the drug was given intramuscularly.

**The Consequence of Neglected Hiatal Hernias.** B. Blades and E. R. Hall. Ann. Surg. **143**:822-832 (June) 1956 [Philadelphia].

The authors believe that for the time being patients with asymptomatic hiatal hernias should not be operated on, but in the future this attitude may change. All hiatal hernias that cause symptoms should, however, be treated surgically unless the patient's condition precludes operation. The authors review observations on 66 patients with hiatal hernias who were operated on during the past three and one-half years. These patients were observed in four hospitals that have a large percentage of elderly patients. Thirty-two of the patients with symptomatic hiatal hernias had dangerous complications. Esophageal stricture existed in 8 patients, bleeding in 22, carcinoma in aberrant gastric mucosa in one, and perforation of the herniated stomach in one. Observations on their own patients and literature reports showed that serious complications of hiatal hernia are more common in elderly than in other patients. Serious complications can and do occur in patients on limited diets, and drug therapy and in those receiving other measures that constitute accepted medical treatment. Five of the 22 patients with hemorrhage required emergency blood transfusions for rapid bleeding and severe anemia. Most of the hazards of operation are the result of the complicating hemorrhages or strictures.

Improvements in anesthetic technique, the availability of blood transfusions, and other modern safeguards of surgery have made crushing or cutting the phrenic nerve for hiatal hernia an almost obsolete operation; however, under extraordinary circumstances a temporary paralysis of the nerve might be desirable. Some surgeons favor the abdominal approach for hiatal hernia repair, but the authors used the transthoracic route in the older patients in this series, principally because the hernias were large and in each case the sliding, short esophagus type or a combination of sliding and paraesophageal hernia was present. The technical advantages were considerable. Conclusions concerning the final results in this series of cases cannnot be made until the test of time can be applied. Except for two known exceptions, the patients appear to have obtained good results.

**Gangrene of Gallbladder.** M. de Juan Martín. Cir. ginec. y urol. **10**:115-116 (March-April) 1956 (In Spanish) [Madrid, Spain].

Gangrene of the gallbladder is extremely rare. A diagnosis is feasible only during operation. The condition simulates acute cholecystitis or empyema of the gallbladder. Gangrene produces gases and is manifested in the roentgenogram by a pneumoperitoneum. It also produces peritonitis with or without perforation of the gallbladder. The subject of this report was an apparently normal woman 70 years old. Jaundice appeared without any previous symptoms and progressed for three days with nausea and moderate fever. The patient complained of abdominal distention and pain on the right side of the abdomen. A painful tumor was palpable over the iliac fossa. On the fifth day of the illness the symptoms became acute. With a diagnosis of empyema of the gallbladder, an operation was performed with the patient under ether anesthesia. The patient was given blood transfusion during the operation. When the abdomen was opened, a great amount of fetid gas escaped. The gallbladder was enormously dilated, with large patches of gangrene over its anterior surface. A puncture of the bladder obtained a fetid purulent liquid. A cholecystectomy was carried out. The removed gallbladder contained 23 calculi. Gangrene involved the anterior surface of the structure and especially the distal pole. The postoperative period was uneventful. The patient was discharged in two weeks and she is, at the present time, in excellent health.

**The Functioning Carcinoid Tumor—a New Clinical Entity: Review of the Clinical Features of the Nonfunctioning and Functioning Carcinoid, Including a Review of Thirty-Eight Cases from the Literature: Parts I and II.** T. W. Mattingly. M. Ann. District of Columbia **25**:239-254 (May) and **25**:304-312 (June) 1956 [Washington, D. C.].

Mattingly states that the little tumors of the intestinal tract discussed in the two parts of this paper were at first not differentiated from carcinomas and were later reported as "little cell carcinomas," carcinoids, and argentaffinomas. Today, the American literature refers to them as "argentaffinoma," but the original term "carcinoid" is more generally used in other parts of the world. These tumors were generally regarded as harmless until 1953, but from 1953 to 1956 a series of events focused interest on the carcinoid tumor. Lembeck, in 1953, isolated a substance from a carcinoid tumor that was identified chemically as 5-hydroxytryptamine and which is identical with vasoactive

material called enteramine by Erspamer and serotonin by Rapport. This substance is found in enterochromaffin tissue and has been demonstrated to be pharmacologically active on smooth muscle, producing intestinal peristalsis, bronchoconstriction, and varying effects on blood vessels. Thus a new concept evolved, namely, that certain carcinoid tumors were "truly functioning tumors" with secretory cells, like the pheochromocytomas of the adrenal gland and the islet cell tumors of the pancreas. The clinical aspects of the apparently benign nonfunctioning carcinoid as well as of this newly recognized functioning tumor are reviewed. The symptoms of the nonfunctioning carcinoid depend upon the site of the primary lesion and on whether it has remained benign and localized to the submucosal region or whether it is locally invasive or has widespread abdominal metastasis.

The author stresses the report on "A Case of Angioma Telangiectaticum Cutis with Chronic Endocarditis and Malignant Carcinoid of the Small Intestine," published by Scholte of Amsterdam in 1931. Although Scholte considered the possibilities of a common denominator in the production of the multiplicity of lesions, he was unable to arrive at a suitable explanation for their relationship and decided that he was dealing with three separate diseases. Since the original case of Scholte, there have been 20 additional well-documented cases with autopsy reports showing carcinoid lesions and endocardial lesions, with good clinical descriptions of cutaneous vascular lesions. There were also symptoms of hyperperistalsis (diarrhea) and metabolic disorders (loss of weight). Data are listed on eight additional patients in whom a diagnosis of malignant carcinoid was established by surgery, biopsy, or postmortem examination and who during life presented intestinal hyperperistalsis (diarrhea), weight loss, cutaneous flushing, and some cardiac symptoms or abnormal cardiovascular findings. Autopsy, however, revealed no endocardial lesions in these eight patients. A group of 9 living patients in whom a diagnosis of malignant carcinoids was made on the basis of biopsy brings the total reviewed by the author to 38 cases.

The important symptoms in patients with functioning carcinoids were found to be gastrointestinal, cutaneous-vascular, cardiovascular, and metabolic. The cutaneous-vascular symptom in the form of paroxysmal flushing of the skin was the most frequent extraintestinal finding. The development of latent cardiac involvement with lesions of the pulmonic and tricuspid valves producing right-sided heart failure was the oustanding pathological entity other than the manifestations related directly to the tumor. The outstanding metabolic disorder was that of altered tryptophan metabolism with loss of weight and the development of a protein deficiency. Important biochemical alterations consist of the presence of abnormal amounts of serotonin in the blood and the excretion of abnormal amounts of serotonin metabolites in the urine. The latter abnormality can be detected in the urine by laboratory tests. Carcinoids occur throughout the intestinal tract from the cardia of the stomach to the rectum. The functioning carcinoid tumors occur primarily in the small intestine, chiefly in the ileum. Considering the number of recent case reports, it is possible that clinically functioning tumors may occur in as many as 25% of all malignant carcinoids of the small intestine.

**Adenomatous Polyps of the Rectum and Colon: Their Relationship to Adenocarcinoma.** J. W. Hamilton, P. Kisner and B. R. Walske. Postgrad. Med. 19:569-576 (June) 1956 [Minneapolis].

Proctosigmoidoscopic examination has become an integral part of the general medical examination at the Veterans Administration hospital in Lincoln, Neb. The authors review observations on 1,221 consecutive patients who were subjected to such an examination in the years 1947 to 1954. This report is concerned only with adenomatous and adenocarcinomatous polyps; familial polyposis, being a different disease, is disregarded. One hundred seventy-one (14%) of the patients had adenomatous (90) or adenocarcinomatous (81) polyps. Cramping abdominal pain was the predominant symptom in the patients with benign polyps. This was particularly true in those in whom the polyps were situated above the rectosigmoid. Rectal bleeding and a change in bowel habit were the most frequent symptoms in the patients with adenocarcinomatous polyps. Sixteen, or nearly 10%, of the 171 patients had no symptoms. A rectal operation for unrelated disease, such as hemorrhoids, had been performed in 11 (12.2%) of the patients with benign polyps and in 14 (17.2%) of those with adenocarcinomatous polyps. This probably indicates that previous examination was inadequate. Twenty-six of the 81 patients with adenocarcinomatous polyps died; 20 of the disease and 6 of other causes. The patients who had highly malignant tumors died of the disease, although a seemingly adequate definitive operation was performed. The definitive operation usually was a radical Miles procedure.

The age of the 90 patients with benign polyps was somewhat higher than that of the 81 patients with adenocarcinomatous polyps. In 29 of the patients with benign polyps the polyps were multiple. Benign polyps also were found in 61 of the 81 patients with adenocarcinomatous polyps. The authors feel that too much reliance is being placed on roentgenographic examination, which was decisive, that is, it permitted the correct diagnosis after proctosigmoidoscopy had failed, in only one of the 90 patients with benign polyps and in 4 of the 81 patients with carcinomatous polyps. Proctosigmoidoscopic examination permitted the correct diagnosis in 80 of the 90 patients with benign and in 58 of the 81 patients with malignant polyps.

**Segmental Resection for Segmental Ulcerative Colitis.** J. M. Donald, E. G. Givhan Jr. and W. N. Viar. Ann. Surg. 143:791-797 (June) 1956 [Philadelphia].

The authors report on three patients with segmental ulcerative colitis who were treated surgically. The first patient had typical segmental ulcerative colitis that responded favorably to segmental resection. In the second patient the segmental ulcerative colitis involved the terminal ileum and was complicated by stricture of the splenic flexure, perforation, and abscess formation. This patient should have accepted operation much earlier. Because of her poor condition at the time of the initial operation, an adequate resection was not performed. It is believed that her present symptoms, though mild, are due to disease in the colon and to regional ileitis. Another operation may become necessary in the future. The third patient had segmental ileocolitis with free perforation at the ileocecal valve causing generalized peritonitis. This case might be classified as regional ileitis with extension into the cecum rather than as segmental colitis. It is included here because there are frequently no clear-cut distinguishing features clinically between regional ileitis, segmental ulcerative colitis, and diffuse ulcerative colitis. The surgical treatment of segmental ulcerative colitis and that of regional ileitis are essentially the same, i. e., segmental resection. Free perforation is a rare complication in this disease.

Although segmental ulcerative colitis has been fairly well established as a definite clinical entity, it possesses many of the characteristic features of both diffuse ulcerative colitis and regional ileitis. It is not generally recognized as a special type of ulcerative colitis that can be treated by segmental resection. It seems to occupy a midposition clinically and pathologically between diffuse ulcerative colitis and regional ileitis. Like the other two conditions, it is a disease of young people, the peak incidence being in the third decade. The most frequent symptoms are bloody diarrhea, abdominal pain, weight loss, and fever. Physical findings include anemia, weight loss, and abdominal tenderness. The most frequent complications are polypoid hyperplasia of the mucosa, perirectal and perianal suppuration, hemorrhage, and stricture formation. Systemic complications closely resemble those found in the diffuse type. Malignancy, a definite hazard in diffuse ulcerative colitis, is rarely encountered in the segmental form. In diffuse ulcerative colitis, the lesion begins in the rectum and spreads orad to involve eventually the entire colon. Segmental ulcerative colitis usually begins in the ascending colon. It may extend in either direction. If untreated, the disease may eventually involve the rectum. Clinically, there are many points of similarity between diffuse colitis, segmental colitis, and regional ileitis. Pathologists, however, report distinguishing characteristics. Microscopically, regional ileitis is characterized by progressive granulomatous lymphangitis. The entire wall, regional lymph nodes, and mesentery are involved. Microscopically and grossly the damage in ulcerative colitis is severe but surprisingly superficial, being mainly restricted to the mucosa and submucosa.

Medical treatment has been disappointing and should be reserved for the mild cases of segmental ulcerative colitis. Complications and progression of the disease call for surgical treat-

ment. Side-tracking procedures, with or without exclusion of the diseased segment, which were advocated a few years ago, are no longer considered the treatment of choice. Since colonic surgery has been made relatively safe, the preferred treatment is resection of the involved segments and reestablishment of intestinal continuity in one stage. This is also the preferred treatment for patients with regional ileitis requiring operation. While recurrence is a possibility regardless of the type of therapy employed, it is important to avoid ileostomy whenever possible.

**Massive Bleeding from Diverticulosis of the Colon.** C. A. Kunath. Am. J. Surg. 91:911-917 (June) 1956 [New York].

The author presents the histories of three patients with massive exsanguinating hemorrhage from the lower colon, in whom the hemorrhage was probably a complication of diverticulosis. This complication is probably not so rare as it would seem from the scarcity of reports in the surgical literature, since all three of the patients were in the hospital at the same time. All three were over 70 years of age. In the colon the pouches are referred to as "false" diverticula, meaning that they consist only of the mucosal and serosal layers. Appearing late in life, they apparently represent an inherent weakness of the muscular walls that have given way under the stress of constipation and increased intracolonic pressure. This weakness usually occurs along the mesenteric border, where the vessels perforate the layers of the intestinal wall; hence the diverticulum is usually in close proximity to the vessels, which in many instances are rather large, especially the veins.

There exist controversial aspects and unanswered questions regarding the management of such cases. The first question that arises when one is confronted with a profuse hemorrhage from the lower colon is, "Will the bleeding stop spontaneously?" Statistics indicate that in a large percentage it will; this was the case in the third of the author's patients. Observations on the first two patients show that bleeding will not stop in some. The second question is what should be done at the time of surgery. A definite diagnosis is the first prerequisite. In the two surgically treated patients reported on this was facilitated by the availability of earlier roentgenograms of the colon, which revealed extensive diverticulosis. Once the diagnosis of bleeding diverticulosis has been verified by exploration, two surgical procedures may be considered: either blind resection of the area most involved, usually the rectosigmoid, or transverse diversion colostomy. A third possibility would consist of the simple insertion of a catheter into the proximal colon, probably the cecum, through which coagulants could be administered topically. In two of the reported patients this was done in a modified fashion, with the protruding but unopened loop of transverse colon used. In each case the instillation of a mixture of powdered Gelfoam and the local administration of thrombin and neomycin was followed by a cessation of the bleeding. Although in each case the colostomy was subsequently opened, the bleeding had apparently ceased before the diversion of the fecal stream. This procedure of catheter cecostomy and topical instillation of coagulants is mentioned only because it parallels to a certain extent the current use of orally administered coagulants in gastric hemorrhage. Diversion colostomy seems to offer greater certainty that the bleeding will cease.

**Pain in Peptic Ulcer.** M. J. Cavanagh and M. N. Friedman. Am. J. Surg. 91:943-945 (June) 1956 [New York].

The action of hydrochloric acid, motor dysfunction, local pathological changes, gastritis, duodenitis, and hypoglycemia have been suggested as causal factors of pain in peptic ulcer, but no acceptable conclusion has been reached. The authors attempt to relate the preoperative symptom of pain to the degree of activity of the ulcer found at operation. They analyzed a series of 101 patients who had undergone subtotal gastrectomies at the Veterans Administration hospital, Brooklyn, N. Y. In 86 of the patients the complete area of gastric or duodenal disease was excised and examined grossly and microscopically. In 15 of the patients the area of duodenal disease could not be resected because of technical difficulties, but an adequate examination was carried out at the operating table via the open duodenum.

The patients were divided into two groups according to whether the pain was present or absent. Pain was a major complaint in the 64 patients of group 1; it was absent or slight in the 37 patients of group 2. For purposes of analysis of pathological material, an active ulcer was considered to be one in which there was interruption in continuity of the mucous membrane. An intact mucous membrane overlying an area of pathological change was considered indicative of healed ulcer. Pathological evidence of past ulceration was always found in patients with an intact mucous membrane. The changes consisted of varying degrees of serosal scarring, adhesions to contiguous viscera, inflammatory infiltration, and fibrosis of the wall of the intestine. Twenty-six (40.6%) of the 64 patients of group 1 had active ulceration, but 19 (51.4%) of the patients of group 2 had active ulceration. These data suggest that the symptom of pain is an unreliable indicator of the state of activity of a peptic ulcer and in addition cast doubt on the claim that pain in peptic ulcer depends upon the presence of an active ulcer. Seventy-three patients could be followed for from 4 to 17 months after surgery. It was found that the relief of pain obtained by subtotal gastrectomy does not depend upon the degree of activity of the ulcer. Excision of the diseased area is not essential for the relief of pain in patients with peptic ulcer.

**Plastic Surgery for Closure of Decubitus Ulcers in Patients with Paraplegia: Based on Experience with 1,000 Cases.** H. Conway and B. H. Griffith. Am. J. Surg. 91:946-975 (June) 1956 [New York].

Three hundred forty-five patients with paraplegia and quadriplegia were treated in the Veterans hospital, Bronx, N. Y., in the five-year period from Jan. 1, 1950, to Jan. 1, 1955. Of these, 225 (65.4%) exhibited 600 decubitus ulcers, which either were present on admission, developed during prolonged hospitalization, or developed after discharge from the hospital and necessitated readmission. One hundred fifty-eight of the ulcers were recurrent. Three hundred forty-seven of the 600 ulcers were treated surgically, 148 of them requiring more than one operation. A total of 415 operations were performed. Two hundred fifty-three ulcers were treated conservatively. Conclusions in this report are based on experience with these cases and an additional 400 decubitus ulcers reported on previously from the same hospital. Sixty-five per cent of the patients had ulcers. Ulcers occurred in 19 different sites. Ischial, sacral, and trochanteric ulcers made up 71% of the total number and presented the greatest therapeutic challenge.

Surgery was the most satisfactory form of treatment. The most successful surgical measures were (1) excision of the ulcer, surrounding scar, underlying bursa, and soft tissue calcification, if present; (2) radical removal of the underlying bone; (3) use of fascia or muscle flap to cover bone stumps and fill dead space; (4) coverage with a large regional pedicle flap of skin and fat; and (5) thick-split skin graft to cover the donor site of the flap. With this technique, the success of surgery, that is, the percentage of ulcers that healed and did not recur, was increased to 97% for ischial ulcers, 86% for trochanteric ulcers, and 84% for sacral ulcers. The recurrence rate after surgery was 3% for ischial ulcers, 6% for trochanteric ulcers, and 11% for sacral ulcers. The treatment of soft tissue calcification is still an unsolved problem. Removal of this tissue is advisable when surgery is performed in the vicinity, and arthroplasty may be helpful in patients who have fused joints due to ectopic calcification of the soft tissues surrounding them. The best treatment seems to be prevention by the methods of physical rehabilitation (early exercises and ambulation). Secondary amyloidosis seems to develop more commonly in patients with large chronic ulcers than in patients with urinary tract infections alone. This is another argument for early closure of the ulcers.

## NEUROLOGY & PSYCHIATRY

**Serpasil in a Hospital for the Mentally Ill with Criminal Tendencies.** J. F. McNeill, W. C. Johnston and W. Pietuchow. New York J. Med. 56:1911-1914 (June 15) 1956 [New York].

Reserpine (Serpasil) was given to 149 mental patients selected at random from 2,000 inmates of the Matteawan State Hospital, N. Y. They were admitted because they were insane and had

committed a serious crime or were potentially dangerous to society. Most of the patients were started on parenteral administration of one 5-mg. ampul of reserpine per day, for one week. Some patients received in addition 3 mg. of the drug by mouth; this dose was increased up to 8 mg. when parenteral administration of the drug was discontinued. A few patients received the drug only by mouth, and a few were given two ampuls or 10 mg. per day parenterally. One hundred forty-four patients received the drug for an adequate trial period of at least three weeks, and 111 (77%) of these showed a significant degree of improvement. Thirty-three (23%) were therapeutic failures. Most of the improved patients had schizophrenia. The paranoids showed the best response to the drug. Five patients died during the study, but none of the deaths resulted from the administration of reserpine. Fifty-five patients (38.2%) had side-effects from the drug such as nasal stuffiness, diarrhea, constipation, lethargy, dizziness, and Parkinsonism. Administration of the drug was discontinued because of the side-effects in two patients. The authors feel that the side-effects might have been greater and the degree of improvement better if all the patients had received more adequate doses of the drug. No absolute correlation could be made between improvement and the patient's weight gain or loss, blood pressure response, or psychiatric diagnosis. There is still no reliable method for determining which patients will be benefited by the drug.

**Vaccination Against Poliomyelitis.** B. Hofman. Maandschr. kindergeneesk. **24**:141-149 (May) 1956 (In Dutch) [Leyden, Netherlands].

The Salk-type of poliomyelitis vaccine, containing virus that has been inactivated with a solution of formaldehyde, has been used on a large scale in the United States, Canada, and also in some European countries, such as Denmark. Although there has been a decrease in the paralytic cases of poliomyelitis during the year after vaccination, a number of important questions still remain to be answered. These concern particularly the duration of the immunity induced by the vaccination and the effect of the vaccination on the epidemiology of poliomyelitis. The author calls attention to the possibilities of vaccination with a live, avirulent virus and explains why this type of vaccine may be preferred in the future. Considering the present status of poliomyelitis in the Netherlands, he advises against vaccination with the inactivated virus and recommends waiting until a better method of immunization, possibly with a live, avirulent virus, has been developed.

**Experience with the Use of Chlorpromazine and Reserpine in Psychiatry: With Especial Reference to the Significance and Management of Extrapyramidal Dysfunction.** G. W. Brooks. New England J. Med. **254**:1119-1123 (June 14) 1956 [Boston].

Chlorpromazine, reserpine, and a combination of these two ataraxic drugs were used in the treatment of 386 women with psychiatric disorders at Vermont State Hospital. Two hundred twenty-six patients had schizophrenia, 30 manic reactions, 17 psychoneuroses, 11 personality disorders, 5 acute brain syndromes, 55 chronic brain syndromes, 8 epilepsy, 13 mental deficiencies, and 21 depressions. Most of these patients were agitated or showed antagonistic attitudes. The usual daily doses for the ataraxics were 300 mg. of chlorpromazine or 3 mg. of reserpine, or in combination, 150 mg. of chlorpromazine and 1 mg. of reserpine. Not more than 800 mg. of chlorpromazine or 30 mg. of reserpine or 450 mg. of chlorpromazine combined with 3 mg. of reserpine was given in one day. The duration of treatment varied from one to 16 months.

As a result of the treatment, 151 patients have been released from the hospital; 15 others are awaiting discharge; 85 are much improved, though still in the hospital; and 75 are improved in that they are quiet and cooperative with ward routine. Thirty-six patients failed to respond to treatment or had to have the drugs withdrawn. Twenty-four patients died in the course of the treatment, but their deaths were not connected with the use of the drugs, and the death rate was normal in comparison with that observed in previous years. The drugs appeared to facilitate communication with patients with chronic schizophrenia. A peculiar type of objectivity and constructive insight was noted in many patients.

Signs of extrapyramidal dysfunction were observed in 204 of the 386 patients, and they were usually followed by initial signs of improvement in the patient's psychosis. The chlorpromazine-reserpine combination tended to produce this dysfunction oftener and sooner than either drug alone. The patient's progress was enhanced when the dysfunction was relieved by the administration of trihexyphenidyl (Artane) or methylphenidylacetate, which are now in use for this purpose in 80% of the drug-treated patients. Conditions within the hospital have been significantly improved: wards for disturbed patients have been virtually eliminated; the atmosphere of the dining halls and living areas has been transformed; and psychotherapeutic and sociotherapeutic facilities are being widely utilized. These results emphasize the need for social agencies to help the hospital restore to society patients who are being retained at the hospital largely because their families can no longer take them back after five years or more of mental illness.

**Further Observations on the Laboratory Diagnosis of Aseptic Meningitis Caused by Group B. Coxsackie Virus.** A. J. Beale, D. Duncan, W. Stackiw and others. Canad. J. Pub. Health **47**:179-186 (May) 1956 [Toronto, Canada].

It is now established that Coxsackie B virus is an important cause of aseptic meningitis, clinically similar to nonparalytic poliomyelitis. Until recently, this evidence was indirect and was based on isolation of Coxsackie B virus from the stools of patients, serologic evidence of infection with the strain recovered, and failure to demonstrate infection with poliomyelitis, mumps, or other viruses. More recently, the direct isolation of Coxsackie B virus from the cerebrospinal fluid of several patients with aseptic meningitis has firmly established the etiological role of this agent. During 1952, patients with aseptic meningitis diagnosed clinically as "nonparalytic poliomyelitis" admitted to the Hospital for Sick Children, Toronto, were subjected to an intensive clinical and virological study. Results of these studies were described in two previous papers, the first of which reported the isolation of Coxsackie B virus from the stools of 13 of 33 patients in suckling mice. Poliomyelitis virus was isolated from only 6 of the 33 patients in monkeys or "Maitland" type tissue cultures. The second paper recorded the isolation in monkey kidney "monolayer" cultures of Coxsackie B viruses from the cerebrospinal fluid of 3 of the group of 33 patients and "unidentified" viruses from the spinal fluid of two patients. Monkey kidney monolayer cultures are more sensitive to poliomyelitis virus than those used in the first study. They are also sensitive to Coxsackie B virus. It seemed desirable, therefore, to reexamine the specimens obtained from the patients originally studied in 1952 to determine the type of Coxsackie B viruses and to see if additional Coxsackie or poliomyelitis viruses could be isolated. In addition, the poliomyelitis and Coxsackie B neutralizing antibody levels in the serums of patients excreting Coxsackie B were determined. The stools from 33 patients with aseptic meningitis seen in 1952 have now been examined by intracerebral inoculation of monkeys and suckling mice and by inoculation of monkey testis suspended cell cultures and monkey kidney monolayer cultures.

Three strains of poliomyelitis type 1, 13 strains of Coxsackie B4 virus, and 8 unidentified viruses were isolated on reexamination. No additional poliomyelitis or Coxsackie viruses were isolated by the new tests, but four additional orphan viruses were recovered. Five patients were found to excrete both poliomyelitis and Coxsackie B viruses in their stools. All the Coxsackie B viruses isolated, including three recovered directly from the cerebrospinal fluid, were shown to belong to Dalldorf's type B4. Serologic investigation of seven patients excreting Coxsackie B4 virus alone showed a rise in titer to the homologous virus in six instances. Serologic investigation of two of the patients excreting Coxsackie B4 and type 1 poliomyelitis showed evidence of infection with both viruses.

## PEDIATRICS

**Children with Hernias, Testes, and Female External Genitalia.** M. R. Gaspar, J. H. Kimber and K. A. Berkaw. A. M. A. J. Dis. Child. **91**:542-548 (June) 1956 [Chicago].

The cases of three children aged 5 years, a few days, and one month, respectively, with female external genitalia and inguinal hernia are described. The first two children were siblings. All three were operated on and were proved to have immature testes within their inguinal canals. Uterus, tubes, and ovaries were absent. These three children may represent a special class of intersexuality characterized by female physique, female breasts and external genitalia, absent or scant axillary and pubic hair, and absence of uterus, tubes, and ovaries. Such patients differ from the usual male pseudohermaphrodite in that the structures derived from both the Müllerian and the Wolffian ducts are rudimentary or absent. These persons reach adulthood as females. They have normal sexual attraction toward males, do not menstruate, and are sterile. Only time will determine whether these children fall into this special group.

Any surgeon who operates on female children with hernias must view each patient as a possible male pseudohermaphrodite. Biopsy should be performed on abnormal-appearing gonads, and they should not be removed. In doubtful cases, the peritoneal cavity should be opened and the pelvis carefully inspected for internal sex organs at the time of the hernia repair. Serious attention should be given to the question of raising patients of this type as boys or girls. Consultation with psychiatrists and endocrinologists is advisable. The cases of the three children reported on should alert physicians to be on the lookout for cases of intersexuality in female infants with hernias and, in particular, should lead surgeons to acquaint themselves with the proper method of handling the problem at the time of operation.

**The Prognostic Significance of Globulinuria in the Nephrotic Syndrome: An Electrophoretic Study of Urinary Proteins in the Nephrotic Syndrome and Acute Glomerulonephritis.** W. Heymann, C. Gilkey and M. Lewis. A. M. A. J. Dis. Child. **91**:570-576 (June) 1956 [Chicago].

Urinary proteins were studied by electrophoresis, using the conventional Tiselius technique, in 11 children with acute glomerulonephritis and in 32 children with the nephrotic syndrome. Some of the determinations were made before treatment with cortisone and corticotropin was started and others were made after proteinuria had begun to decrease as a result of this treatment. Twenty-four-hour losses of urinary protein in excess of 6 gm., losses of globulin in excess of 2.1 gm., and an albumin-globulin ratio in the urine of less than 1.1 were noted only in nephrotic children whose disease progressed to renal failure. When corticotropin or cortisone diminished proteinuria, the urinary albumin-globulin ratio was not specifically affected. The albumin-globulin ratio in the urine of children with acute glomerulonephritis varied between 0.3 and 1.85. Because proteinuria is less marked and lasts less long, the magnitude of urinary globulin excretion in these patients is much smaller than in the nephrotic patients. Despite certain limitations, the extent of globulinuria and the determination of the albumin-globulin ratio in the urine proved to be of prognostic value in four nephrotic children in whom definite evidence of ensuing renal failure was not yet available.

**Allergy in the Infant and Preschool Child.** B. Ratner, L. V. Crawford and J. G. Flynn. A. M. A. J. Dis. Child. **91**:593-600 (June) 1956 [Chicago].

The allergic status was studied in 27 infants and 37 children between the ages of 2 and 5 years with asthma, eczema, hay fever, or urticaria. The age of onset of allergy does not appear to be controlled by hereditary factors, for the incidence of inheritance in these young children was no greater than that found in other allergic persons. Seventeen (27%) of the 64 patients gave evidence of congenital allergy (sensitization in utero) by skin tests of sensitivities to foods they had not previously ingested. It seems that allergic diseases in young children show a predominance of eczema in the first years of life, followed by a fall in eczema and a rising incidence of asthma and hay fever as age progresses. No cases of true hay fever were observed in the children before the third year of life. Pollen asthma, however, did occur before this age. The incidence of causative factors in the children as they progressed in age was characterized by a decreasing sensitivity to foods and an increasing sensitivity to pollen. The incidence of sensitivity to miscellaneous inhalations was relatively high, whereas that of mold sensitivity was moderate. In the first year of life, 100% of the patients reacted to foods alone or in combination with other allergens. By the fifth year this was reduced to 60%.

Chocolate was shown to be an infrequent offender. Milk sensitivities occurred in 18 patients (28%). None of these patients reacted to milk alone. Most of them reacted to the whey proteins. Less than one-quarter reacted to the casein fraction. Only this latter group required milk substitutes. Most of the milk reactors tolerated heat-treated milk. Thirty-one patients (48%) reacted to egg proteins; 30 (46%) reacted to one or more cereal grains, but none reacted to rice; 18 (28%) reacted to citrus fruits; 37 (58%) reacted to sea foods. No patients reacted to ragweed alone, and practically all who reacted to ragweed also reacted to Pyrethrum and tobacco. No patient reacted to grass pollen alone. In none of the patients was timothy the sole offending grass. Tree pollen sensitivity was at times the only pollen sensitivity. Most of the miscellaneous inhalant sensitivities occurred with other sensitivities, but occasionally these inhalants were the sole offenders. Mold sensitivity always occurred in conjunction with other sensitivities.

Nasal eosinophilia was an important aid in the early diagnosis of allergy and occurred in 33 (89%) of the 37 children who presented adequate smears for this type of study. Twenty children (31%) showed evidence of retardation of bone maturation. Most patients responded well to a multifaceted therapy. Infants with allergy should be skin-tested early and studied comprehensively. The rehabilitation of a young allergic cripple should forestall or shorten the inroads of allergy in later years.

**Duodenal Ulcer in a 5-Month Old Infant.** R. B. Tudor. Journal-Lancet **76**:168 (June) 1956 [Minneapolis].

The boy was born at term weighing 5 lb. 10 oz. (2,551 gm.) During the neonatal period he had been vomiting his formula. At the age of 5 months he was a well-nourished, active, pale child. His temperature was 100.8 F (38-2 C) rectally and his weight 14½ lb. (6,571 gm.) The hemoglobin level was 2.7 gm. The peripheral smear showed hyperchromia and anisocytosis. Stools were positive for occult blood by the guaiac test. Roentgenogram of the stomach and small intestine showed a definite ulcer crater situated in the superior distal portion of the duodenum. After the child had been given whole blood, a changed formula, and medicaments, the hemoglobin level was found to be 14.5 gm., and when he was discharged from the hospital he appeared greatly improved. Roentgenoscopy several months later revealed no ulcer crater.

Peptic ulcers are being diagnosed with increasing frequency during the first two years of life. The case presented emphasizes the fact that vomiting in early infancy may be caused by a gastrointestinal ulcer amenable to medical treatment.

**Relationship of Retrolental Fibroplasia to Oxygen Concentration.** D. H. Weintraub and A. Tabankin. J. Pediat. **49**:75-79 (July) 1956 [St. Louis].

Between July 1, 1952, and June 30, 1953, 83 premature infants were admitted to the Premature Center of the Children's Hospital of Buffalo, N. Y. In these infants, a controlled experiment was attempted in which observations were systematically made on the effect of alteration in the oxygen concentration on the incidence of retrolental fibroplasia. Forty-nine infants were exposed to concentrations of oxygen of from 60 to 64% for 30 days and 34 infants were exposed to low concentrations of 30% for the same period. All infants observed were placed in incubators. Oxygen was administered from an outside bank of tanks and oxygen concentrations in each incubator were determined every three hours for the duration of the study. All 83 infants were abruptly removed from the oxygen environment after 30 days. Partial retinal detachment occurred in 17 of the 49 prema-

ture infants and complete retinal detachment (blindness) occurred in 8 infants. Only one of the 34 premature infants exposed to low concentrations of oxygen (30%) had partial retinal detachment (with subsequent reattachment), and in none of this group did complete retinal detachment occur.

After these data were obtained, the routine of oxygen administration at the Premature Center was revised. Oxygen in concentrations above that of the outside air up to 38% and enriched with moisture was administered to infants who were cyanotic from respiratory distress only. These infants remained in this environment continuously for periods varying from 12 hours to 7 days; usually, by that time, clinical evaluation indicating improved respiratory exchange allowed for their abrupt removal to room air without obvious distress. Between Sept. 1, 1953, and Jan. 1, 1955, with this routine, no case of blindness was observed. Thus, when oxygen therapy was restricted to definite needs, retrolental fibroplasia, except in one infant who showed early retinal vascular changes which subsequently subsided, disappeared from the Premature Center. The restriction of oxygen therapy to definite needs exerted no deleterious effect on the mortality rate. The evidence presented supports published data indicating that the development of retrolental fibroplasia is in some way related to the prolonged use of high concentrations of oxygen.

**The Fight Against Infectious Hospitalism in a Children's Nursery and Hospital.** R. M. Du Pan, E. Novel, H. Fischer and M. Sangue. J. Pediat. 49:56-66 (July) 1956 [St. Louis].

The term "infectious hospitalism" is proposed for diseases children may contract in the course of a lengthy sojourn in a hospital environment. In an attempt to prevent such infectious hospitalism, the following methods were used in the Clinique des Nourissons in Geneva, Switzerland, an institution to which children with contagious diseases and nutritional difficulties, premature infants, and healthy boarders were admitted. By placing children with contagious diseases in an isolation ward on the ground floor, completely separated from the rest of the nursery and hospital by a door locked with a key, the authors were able to prevent for a period of six years the complication of an epidemic in the rest of the nursery and hospital. On the other hand, respiratory, throat, and ear infections and cases of submaxillary adenitis were not eliminated, and 995 days (5.53%) of sickness from respiratory infections were observed in the children in the course of 18,000 days spent at the institution.

The top floor of the institution with the ward for premature or newborn children and feeble infants of less than 3 months of age was divided into six small compartments, each one separated from the others by glass walls that did not reach the ceiling and that opened into the same corridor. The air was humidified at 50% by vapor and maintained at 73.4 F (23 C) in summer by an air conditioning apparatus; it was disinfected day and night by ultraviolet rays. In this ward, the nurses wore masks, and between each compartment they changed aprons and disinfected their hands by washing with soap and then soaking them a minute in disinfectant. The average of nasopharyngeal infections in the ward was 0.06%, with 6 days of disease out of 10,779 days spent at the clinic. A study of the bactericidal effect of the ultraviolet rays revealed that they probably did not act by forming a protective screen but rather by rapidly destroying the bacteria that circulated in their field of action. Since the authors have never observed the slightest noxious effect of the quartz lamps on the children admitted to this ward, they recommend ultraviolet ray disinfection of rooms for premature and feeble infants, who are especially sensitive to respiratory tract infections.

**Gastro-Enteritis in Infancy and Childhood: A Review of 235 Cases.** H. Goepito. M. J. Australia. 1:836-840 (May 19) 1956 [Sydney, Australia].

During the period from July, 1954, to July, 1955, 235 children up to the age of 12 years were admitted to the Royal Alexandra Hospital for Children in Sydney for the treatment of enteritis. These 235 include those readmitted who had been discharged from the hospital but had had a relapse at home and also those admitted to hospital for some other disease and in whom diarrhea developed during their stay there. The duration of hospital stay of 228 patients discharged as cured of gastroenteritis was as follows: less than two weeks, 153 cases; between two and four weeks, 56 cases; more than four weeks, 18 cases. Although diarrhea is the most frequent initial symptom in gastroenteritis, the disease sometimes presents itself with convulsions, irritability, fever, and vomiting, without diarrhea. The provisional diagnosis at the time of hospitalization was gastroenteritis in 200, respiratory tract infection in 12, meningitis in 4, and other diseases in 2 of the children; the other 17 children were admitted for investigation.

The disease was more frequent in males than in females (63% and 37% respectively). The fact that 75% of the children were less than 2 years old proves that gastroenteritis is most common during infancy. The incidence of the disease was fairly constant throughout the year. A causal agent was isolated from 14% of the patients; in 86% no pathogens could be found in the stool.

The treatment of gastroenteritis consists of the following measures: If intravenous fluid therapy is not considered to be necessary, a diet of 10% glucose in isotonic sodium chloride solution mixed with equal parts of whey is given on the first day. This is followed by three parts of whey and one part of the infant's normal formula on the second day. The strength of the feeding is increased gradually, and the realimentation, should be completed on the fifth day, when the child receives its normal feeding. On the first, second and third days of the realimentation period, an electrolyte mixture is added to the feedings. In the more severe cases of enteritis, in which dehydration has advanced to a degree equivalent to about at least 5% of the body weight, intravenous replacement therapy is given. The majority of children (140) were not given antibiotics. Ninety-five patients were given sulfadiazine, chloramphenicol, or one of the tetracycline group (Terramycin, Aureomycin, or Achromycin) or their combinations. If the enteritis proved to be a Shigella infection, phthalylsulfacetamide was the drug of choice. Children with Salmonella infection and enteritis of unknown cause are not given antibiotics routinely. In the latter group, if diarrhea and vomiting persisted, Achromycin was used. The mortality rate was 3%. The autopsies in 26 fatal cases of gastroenteritis (observed between 1950 and 1955) revealed that in 15 inflammatory reactions had occurred in the intestines, in 7 there was doubtful evidence of inflammation, and in 4 no histological changes were found.

**Immunization of Children Against Whooping Cough with Pertussis Haemagglutinin (H. A. P. A.): Field Results over Three Years.** D. W. Rankin and S. Fisher. M. J. Australia 1:873-875 (May 26) 1956 [Sydney, Australia].

Pertussis hemagglutinin aluminum phosphate adsorbed (H. A. P. A.) is a suspension of floccules of aluminum phosphate on which are adsorbed components of freshly grown virulent Hemophilus pertussis obtained by extracting bacterial bodies with molar, slightly alkaline sodium chloride solution. The immunizing course for children consists of two subcutaneous injections of 0.25 ml. each, spaced a month apart. Over the past three years, H. A. P. A. has been issued to medical practitioners for use in their practices and also to five municipal councils in Victoria for use in immunization campaigns. The present survey was conducted along two independent lines. In the first, all private doctors who had received 5 ml. or more of H. A. P. A. were sent circulars and their opinions were sought. They were asked whether they had observed children, unimmunized or immunized with H. A. P. A., who had been exposed to contact with clinical cases of whooping cough in their homes and, if so, whether the children had contracted the disease. In the other part of the survey the protective efficiency of H. A. P. A. was investigated in the five municipalities using it in immunization campaigns.

The reports of practitioners concerning home contacts of children with pertussis revealed that, of 19 children immunized with H. A. P. A. and so exposed, 2 contracted pertussis; of 16 not immunized, 14 did so. In the second investigation, covering four municipal districts in which H. A. P. A. was used in immunization campaigns, 9 cases of pertussis were found in 4,920 child-years in children fully immunized with H. A. P. A., and 204 cases in 30,063 child-years in other children. In the light of these results, H. A. P. A. was considered an efficient prophylactic in children.

## UROLOGY

**Early Diagnosis and Treatment of Wilms's Tumor in Children.** G. de Faria. Rev. brasil. cir. **31**:375-384 (March) 1956 (In Portuguese) [Rio de Janeiro, Brazil].

A girl, 2 years and 11 months old, in excellent general condition, was hospitalized because of hematuria. She had had attacks of recurrent microscopic and macroscopic hematuria for 11 months, during which she was given symptomatic treatment. The kidney was not palpable. Routine examinations, including retrograde pyelography, established the diagnosis of tumor of the left kidney. The treatment consisted of left nephrectomy. The microscopic study of the kidney showed embryonal carcinosarcoma (Wilms's tumor). Deep roentgen therapy was employed, starting on the third day after the operation. A daily dose of 200 r was given for 15 consecutive days, up to a total dose of 3,000 r in two weeks. Convalescence was uneventful. The patient was in excellent condition after a follow-up of one year and eight months. The three main symptoms of embryonal carcinosarcoma are a palpable renal tumor of rapid development, pain, and hematuria. As a rule, the palpable tumor appears early and hematuria appears late. In this patient, recurrent hematuria was the only symptom. The author reviews the records of four other patients with Wilms's tumor observed in the hospital.

**Differential Diagnosis Between Cancer and Solitary Serous Cyst of the Kidney.** B. G. Clarke, W. J. Goade Jr., H. L. Rudy and L. Rockwood. J. Urol. **75**:922-929 (June) 1956 [Baltimore].

The authors analyzed the roentgenograms and clinical histories of 83 patients with proved diagnoses of renal cyst or cancer to see if they could find any satisfactory criteria for differential diagnosis. They considered the reasons, other than diagnostic, for which operative exploration and excision may be justified when a renal mass is thought to be a cyst rather than a tumor.

No absolute pyelographic or aortographic criteria for differential diagnosis could be found in a study of the records and x-rays of 36 patients with proved renal cell carcinoma and of 47 with solitary serous cysts of the kidney. A diagnosis of cancer is favored by (1) a history of pain, hematuria, and fever; (2) the finding of anemia or a palpable mass; or (3) radiographic observations of intrarenal calcification, apparent calyceal amputation, or obliteration of the psoas outline. Patients with a renal mass the x-rays of which suggest cyst deserve exploration with removal of the cyst not only to clarify the diagnosis but also to prevent gradual enlargement of the mass with impairment of renal function or production of abdominal pressure symtoms; and to prevent the spontaneous rupture of the cyst or the development of tumor or infection within it. In patients who present a poor operative risk, in whom pyelograms suggest cyst rather than tumor, its spherical avascular character may be demonstrated in nephrotomograms or aortograms. Translumbar needle puncture may then be carried out with very little likelihood of encountering cancer. The cystic character of the lesion is corroborated by x-ray contrast study as well as by cytological, bacteriological, and chemical examination of the contained fluid.

**Disseminated, Fatal, Postpartum Candidiasis with Renal Suppuration: Case Report.** J. B. Davis, J. D. Whitaker, L. K. Ding and J. H. Kiefer. J. Urol. **75**:930-936 (June) 1956 [Baltimore].

The authors call attention to the increasing incidence of monilial infections (candidiasis) since the introduction of antibiotic therapy. A 29-year-old woman was hospitalized for an elective cesarean section. She had had multiple sclerosis for five years, with spastic paralysis and severe contractures of her lower extremities. After the cesarean operation, penicillin and streptomycin were given routinely for four days. Later, because of grade 3 systolic murmur and gross hematuria, she was given large doses of penicillin and streptomycin on the presumptive diagnosis of subacute bacterial endocarditis. Signs of pelvic thrombophlebitis appeared on the 10th postoperative day. Chest x-rays revealed a right lower lobe atelectasis. Terramycin was added to the therapy. Blood and urine cultures obtained at the onset of the septic process contained Candida albicans.

The septic course continued. The kidney was explored because of urographic evidence of obstruction at the ureteropelvic juncture. Subcapsular abscesses were found. The abscessed kidney was removed. Blood cultures after the nephrectomy revealed no yeast or bacteria, but cultures of the urine and tracheal aspirate showed gram-negative enterococci and C. albicans. Because of her continued septic course, the patient was given a variety of chemotherapeutic agents and antibiotics, including furadantin, polymyxin, and penicillin, with no change in her clinical status. She lapsed into a shock-like state followed by coma and died. It is believed that the patient probably had vaginal thrush (moniliasis) prior to her cesarean section and that it was introduced into the urinary tract on catheterization when the urinary retention developed. A hopeless therapeutic dilemma was created when the moniliasis became disseminated. The authors warn against the prophylactic use of antibiotics postoperatively, especially in chronically debilitated patients.

**Undescended Testes: Report of 153 Cases with Evaluation of Clinical Findings, Treatment, and Results on Followup up to Thirty-Three Years.** J. R. Hand. J. Urol. **75**:973-989 (June) 1956 [Baltimore].

One hundred fifty-three patients with undescended testes were seen in the Portland Clinic from Jan. 1, 1922, to April 1, 1955. Of the 150 analyzed, 49 had bilateral and 101 had unilateral retention, so that observations were made on a total of 199 testes. Orchiopexy was deferred until puberty unless complications demanded earlier intervention. Delayed descent occurred in 44 testes, 16 responding to hormone stimulation. Forty-two reached the scrotum at the ages of 8 to 15, one at the age of 18, and one at the age of 21. Orchiopexy was performed on 86 testes, in 59 one-stage and 27 two-stage procedures. Sixty-seven were done at puberty. Four testes were subsequently removed. Primary orchiectomy was performed in 35 patients, 3 being puberal boys and 32 adults. In 67 instances there was either absence or partial to complete loss of testicular function because of gross congenital defects (17 instances), orchiectomy, or no treatment. Abnormalities associated with retention were obesity, eunuchoidism, gynecomastia, various neuropsychiatric disorders, hernia, torsion, and malignancy. Microsections from 36 retained testes showed degeneration, which generally progressed in proportion to the length of retention. The testes of one man aged 25, however, showed preservation of germinal epithelium. Prepuberal tubules persisted in the extirpated testes of five adults. Biopsy of five testes brought down by two-stage orchiopexy 4 to 10 years previously showed persistent prepuberal tubules in three. Spermatogenesis was complete in four and arrested in one. However, the spermatogenesis was observed in only one-sixth of the tubules in the section of each testis.

The four patients with malignant degeneration of the testes have survived for from 5 to 15 years. The incidence of malignancy in 28 scrotal testes was 12.5% and in 199 retained testes about 2% or, if the 44 testes with delayed spontaneous descent are deducted, 2.76%. On follow-up, the position, size, and consistency of the testes were better after spontaneous descent than after orchiopexy. Position was better after the two-stage procedure, but size and consistency were better after the one-stage procedure. Eight men fathered children after delayed spontaneous descent, and five fathered children after one-stage orchiopexy done at puberty.

The author concludes that the testes should be given an opportunity to descend spontaneously, provided there are no complications such as hernia, torsion, or arrest in an ectopic position. Hormone stimulation can be used diagnostically before puberty, and is particularly valuable in bilateral retention; its use must not be delayed beyond puberty, as established by the appearance of the first pubic hair. The hormone must be given in adequate amounts. If adequate hormone therapy does not effect descent, exploration is indicated, but must not be deferred beyond puberty. Biopsies are needed, not only at the time of orchiopexy but also, for comparison, when the testes are released after fixation to the thighs in the two-stage operation, as well as after scrotal residence following both the one-stage and two-stage procedures. There is also need for biopsies of testes that descended spontaneously after prolonged retention.

## THERAPEUTICS

**Clinical Experience with a New Hypotensive Drug: Combination of Choline Theophyllinate and Rauwolfia Serpentina.** Minerva med. 47:723-727 (March 14) 1956 (In Italian) [Turin, Italy].

Thirty-two patients with various hypertensive conditions were treated with a combination of choline theophyllinate and Rauwolfia. The hypotensive effect of the latter is lasting, and side-effects are minimal. Furthermore, it has a tranquilizing effect on the central nervous system. Theophyllinic substances dilate the coronary arteries. Choline increases the solubility of theophylline but does not increase its toxicity. Each unit of the drug contained 150 mg. of choline theophyllinate and 12.5 mg. of Rauwolfia serpentina. Patients with kidney disease were excluded. The blood pressure of each patient was checked repeatedly for a few days before the therapy. Function of the kidney and of the spleen were also checked. The age of the patients ranged from 20 to 86 years. Beginning doses were from 3 to 4 units a day until a variation in the blood pressure was obtained. Then the doses were reduced to one every 12 hours. Results were very good in 15 patients, good in 13, and poor in 4. The blood pressure decreased within 3 to 16 days. The pulse rate stayed between 70 and 80 beats per minute. An increase in diuresis, at times very marked, was observed in a few patients. One patient was unable to tolerate the drug, in another it caused nausea, and in a third it caused some drowsiness. The hypotensive effect of the drug was always preceded by a general feeling of well-being.

**Protective Action of Pantothenic Acid against Toxic Effects of Streptomycin and Dihydrostreptomycin.** R. Ducrot, O. Leau and C. Cosar. Antibiotics & Chemother. 6:404-410 (June) 1956 [Washington, D. C.].

The prolonged administration of dihydrostreptomycin frequently causes an alteration in the auditory function and, consequently, some degree of deafness. With streptomycin, such alterations are generally less pronounced; when present, the disorders are mostly of vestibular origin. Many authors have attempted to improve the tolerance to these products. The authors review some of these investigations, particularly those carried out by Keller and associates with pantothenic acid. They describe studies carried out by themselves on the action of pantothenic acid on the toxic effects of streptomycin and dihydrostreptomycin in mice, rats, and cats. It was found that the two antibiotics cause ototoxic changes, which increase with time. The combination of pantothenic acid with these products results in a highly significant decrease of the ototoxicity. The study of the protective action of pantothenic acid against cochleovestibular disturbances caused by streptomycin or dihydrostreptomycin has made it possible for the authors to confirm the results reported by Keller and coworkers. Pantothenic acid actually appeared to be effective in the prevention of auditory impairments in rats subjected to a treatment of long duration with either antibiotic. It also appeared effective, although to a lesser degree, in the prevention of vestibular disturbances caused by the use of streptomycin in cats. This protective action has been obtained by using pantothenic acid either as sodium pantothenate or as one of its streptomycin or dihydrostreptomycin salts.

**A Preliminary Report on the Treatment of Amoebic Dysentery with PPA-701.** A. Z. Shafei. J. Trop. Med. 59:95-99 (May) 1956 [London, England].

Camoform, diallyl-diethyl-amino-methyl phenol dihydrochloride (PAA-701), is structurally related to amodiaquin. It is a basic diphenol containing neither iodine nor arsenic. The author reviews several reports on the use of this drug in the treatment of amebic dysentery and reports on his own experience with it in the treatment of 15 patients with amebic dysentery. Three of these patients had acute symptoms and the other 12 had a history of recurrent dysenteric episodes. When the drug was given in a dose of 1.5 gm. daily for 14 days, it cured two-thirds of the patients. Another course given after one week's rest raised the rate of cure to four-fifths of the patients. The treatment failed in three of the patients. No significant side-reactions occurred. Neither the blood picture nor the functional tests of liver and kidney revealed any abnormalities.

Most antibiotics act in amebic dysentery through their indirect effect on associated intestinal bacterial flora. Fumagillin and a few other antibiotics, however, possess activity against Endamoeba histolytica. The present study revealed that the effect of Camoform (PAA-701) is similar to that of fumagillin. This suggests that the action of Camoform on intestinal amebiasis is mostly direct.

**Clinical Contribution to the Treatment of Heart Diseases with Cellulin Coreale.** F. DeMatteis, G. Barbano and C. Barocelli. Minerva med. 47:889-893 (March 28) 1956 (In Italian) [Turin, Italy].

The authors studied the effects of cellulin coreale, a lipid extract of myocardial tissues, on 243 patients with heart disease. The patients were divided into four groups. The first group consisted of 116 patients with valvular or myocardial involvement with chronic circulatory myocardial insufficiency. The second group consisted of 60 patients with a similar affection but with normal circulation. The third group had 47 patients with coronary artery disease and angina pectoris. The fourth group had 20 patients with cardioneural affections. Cellulin coreale was given to the patients of the first group before treatment with digitalis. The drug had a positive effect on the diuresis and increased the effect of digitalis. After the insufficiency was overcome, administration of the drug was continued for several months with intervals of 10 to 15 days after 30 injections. In the second group the drug constituted the basic therapy. Ten to 15 days after the first injection the patients expressed their satisfaction; they did not feel tired; they could take long walks; and they slept better, digested better, and urinated less than usual. In the third group the drug helped in the assimilation of oxygen. The patients of the fourth group received treatment for from three to four months. A sense of general well-being was the main effect. The drug has no side-effects and is well tolerated. Objective results follow long after subjective results. Quinidine is tolerated better by the myocardium when it is associated with cellulin coreale.

## PATHOLOGY

**Atherosclerosis: IV. The Relation of the Composition of the Blood Lipids to Atherosclerosis in Experimental Hyperlipemia.** E. F. Hirsch and R. Nailor. A. M. A. Arch. Path. 61:469-487 (June) 1956 [Chicago].

This study is concerned with an investigation of the lipid factor in the pathogenesis of atherosclerosis, the aim being to establish a relation between the chemical composition of experimentally produced hyperlipemias and the development of atherosclerosis. The lipids of the blood are transported as particles of mixed chemical composition and emulsified in an aqueous medium containing protein and other organic and inorganic solutes. There are two systems in the blood; the one, the emulsified lipid, the other, the aqueous, in which the lipids are suspended. Each system has a solvent in which solutes are dissolved. The lipids of the blood consist of three main classes: (1) the neutral fats, namely, the triglycerides of the saturated and unsaturated fatty acids; (2) the phosphatides, which are related chemically to the neutral fats, and (3) the sterols, cholesterol and its esters. Esterified fatty acids are integral compounds of all of these lipid fractions except the free cholesterol. The amounts of the fatty acids in the various fractions of the blood lipids are significant in the evaluation of hyperlipemic disorders. The emulsified lipids in the blood are like a solvent and its solutes, the chemical and physical properties of which may vary. Lipids liquid at body temperature, such as olein, are solvents for those solid at this temperature. In some hyperlipemias the solvent lipids are in excess; in others the solutes approach the supersaturation level. The hyperlipemia produced in rabbits by the supplemental feeding of cream is not associated with lipid deposits in the tissue or lining of the aorta. The hyperlipemia produced in rabbits by supplemental feeding of cream

containing 0.5% or 1% cholesterol is greater than when cream alone is given. The hyperlipemia produced in rabbits by the supplemental feeding of cholesterol without cream is much greater than that in both of the other groups.

Analyses of the lipid plaques in the lining of the aortas of rabbits fed cream and cholesterol and of those in the aortas of rabbits fed cholesterol demonstrate that the plaques are not pure lipids but rather mixtures, composed of neutral fats, phospholipids, cholesterol, and cholesterol esters. The total lipids in the plaques of the cholesterol-and-cream-fed rabbits were increased to 8 to 10 times the values of the total lipids (average analysis) in the serum of these animals, and in the cholesterol-fed rabbits, 14 to 16 times. The amount of increase of the separate lipid fractions in the plaques of the cholesterol-fed animals over the corresponding serum lipid fractions was practically the same, 16-fold to 19-fold, except the neutral fat, which was increased only 9-fold. These comparative analyses, demonstrating that the aortic plaques are mixtures of lipids, point to the probability that the lipids at first are deposited in the lining of the aorta in approximately the same fractional distribution as they are in the lipids of the plasma. The exception to this could be the neutral fat (solvent) fraction. The smaller increase in the amount of this fraction in comparison with the others, which are increased almost equally in the plaques, suggests that a portion of this fraction (solvent) could have been removed. If this process is in effect, lipids deposited originally in the same composition as those of the blood lose solvent (or add solute) and acquire more and more those properties that stimulate phagocytosis. The acicular slits found in atherosclerotic plaques and other tissues of the human body, clefts where crystalline cholesterol has been dissolved, lend supportive evidence for such a physical change of the lipids in the tissues. Crystals are formed in tissues according to the general principles of crystallization, namely, the supersaturation of a solvent by a crystalloid, through concentration of the solvent or the addition of the crystalline solute.

Experimental atherosclerosis resulting from the saturation of the blood lipids by cholesterol esters and cholesterol takes place in a short time in the tissues of an animal presumed to be normal. The blood lipid composition doubtless is dominant under these conditions, but tissue factors are significant in determining the sites of deposition. The differences in the proportions of the blood lipid fractions and the tissue studies in these experimentally produced hyperlipemias suggest that, when tissue lipids approach in composition the saturation of solvent by solute, such as cholesterol esters and cholesterol, whether in transport or in deposit, they become significant causal agents in initiating the evolution of atherosclerotic lesions. The structural changes of the liver and of the glomeruli in the kidneys of the cholesterol-fed rabbits are tissue effects of the lipids beyond those of simple deposition.

**Hemosiderin Deposition in Early Atherosclerotic Plaques.** J. C. Paterson, T. Moffatt and J. Mills. A. M. A. Arch. Path. **61**:496-502 (June) 1956 [Chicago].

The "vascularization theory" attempts to explain all the changes in atherosclerosis on the basis of recurrent hemorrhage into the intima of arteries. Objections have been raised to this theory suggesting that vascularization of the intima with hemorrhage seems to be the result, not the cause, of the atherosclerotic process. Indirect evidence has now been obtained that suggests that hemorrhages into atherosclerotic plaques are extraordinarily frequent and that they occur in the earliest as well as in the later stages of the disease. The evidence has been obtained by the demonstration, not of hemorrhage proper, but of one of the sequelae of hemorrhage, hemosiderin formation; and this has been achieved by subjecting gross segments of unfixed arteries to the Prussian-blue reaction. Deposits of hemosiderin so small that they would be easily missed in thin microscopic sections become quite evident when stained in this way.

Material was obtained at autopsy from approximately 150 persons, the majority of whom were middle-aged or elderly men. In each case a 6-in. segment of the thoracic aorta, extending proximally from the celiac axis, was removed, opened anteriorly with scissors (sometimes of the iron-free type), stripped manually of its adventitia and outer media to remove those tissues that were contaminated by metallic instruments, and rinsed quickly but thoroughly in distilled water. The specimen was then exposed immediately, in an unfixed state, to a freshly prepared solution of equal parts of 10% potassium ferrocyanide (preferably ferricyanide-free) and 20% hydrochloric acid. During these maneuvers, care was taken to avoid contaminating the specimen or the solutions with metallic objects. The specimen was left in the reagent at room temperature for half an hour, rinsed quickly in distilled water, and then examined with the naked eye or with a magnifying lens. A photograph of the specimen in color was taken before exposure to the reagents and immediately afterward.

Exposure of segments of the unfixed human aorta to the Prussian-blue reaction revealed numerous deposits of iron lying exclusively within atherosclerotic plaques. The deposits are considered to be hemosiderin. They were found in the earliest lesions of the disease as well as in end-stage plaques. Microscopically, the deposits were found in close proximity to capillaries of the intimal variety. The focal nature of the deposits and their close association with capillaries suggest that they mark the spots where intimal hemorrhages have occurred fairly recently. This impression is strengthened by the results of attempts to exclude other mechanisms by which hemosiderin might have been deposited in these locations.

**Biopsy Studies in Ulcerative Colitis.** S. C. Truelove and W. C. D. Richards. Brit. M. J. **1**:1315-1318 (June 9) 1956 [London, England].

Small biopsy specimens of the colonic mucosa from just above the rectosigmoid junction were obtained in 111 instances from 42 patients with ulcerative colitis, and the relations between the microscopic findings, the clinical state, and the sigmoidoscopic appearance in these patients were studied. Similar studies were carried out in a group of 24 patients who did not have ulcerative colitis, who apparently had a normal mucosa at sigmoidoscopy, and who served as controls. Seventy-one biopsy specimens obtained from patients with mild, moderate, or severe symptoms of ulcerative colitis, including passage of blood per rectum, diarrhea, fever, tachycardia, anemia, increased erythrocyte sedimentation rate, and loss of body weight, showed mild, moderate, or severe inflammation. Twenty-five of 40 biopsy specimens obtained from patients with ulcerative colitis in clinical remission showed inflammation. Biopsy specimens obtained from patients in the control group were normal, except for two that showed slight microscopic changes. Brief details are given concerning two patients whose colonic mucosa was studied by serial biopsy and in whom a microscopic relapse preceded the clinical relapse by several weeks.

**Abnormal Epithelial Cells in Ulcerative Colitis.** M. M. Boddington and S. C. Truelove. Brit. M. J. **1**:1318-1321 (June 9) 1956 [London, England].

From 31 patients with ulcerative colitis and from 18 patients without ulcerative colitis or any other organic disease of the gastrointestinal tract, wipings from the colonic mucosa were obtained under direct vision through a sigmoidoscope with a special tool, which consisted of a long metal rod with a "perspex" head screwed on to it. In about two-thirds of the specimens obtained from the patients with ulcerative colitis, abnormal colonic epithelial cells were detected with the aid of Papanicolaou's technique. In their most pronounced form, the abnormal cells were much enlarged and contained large nuclei with prominent nucleoli and a disturbed chromatin pattern. These abnormal cells may be found in any patient with abnormal sigmoidoscopic findings, but are most frequent in patients with severe disease. They were commonly observed in patients in the course of their first attack of ulcerative colitis. There seem to be three possible explanations for the occurrence of these cells: (1) they are to be expected whenever the colonic epithelium is provoked into vigorous regenerative action by extensive damage, from whatever cause; (2) they represent a primary epithelial disturbance in ulcerative colitis, as, for example, a maturation arrest caused by the absence of a specific factor necessary for epithelial development; and (3) they are abnormal cells secondary to severe inflammation in the colonic mucosa. The abnormal cells have many of the features of malignant cells; this is of particular interest in view of the fact that patients with ulcerative colitis have a tendency to carcinoma of the colon.

# BOOK REVIEWS

**Management of Strokes.** By Keith W. Sheldon, M.D. [This material was published in *Am. Pract. & Digest Treat.*, Oct., 1955.] Cloth $3. Pp. 134, with 52 illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; 2083 Guy St., Montreal, Canada; Pitman Medical Publishing Co., Ltd., 39 Parker St., Kingsway, London, W.C.2, England, 1956.

The title of this small manual has been well chosen. The term "strokes" is preferred to "cerebral vascular accidents," which is confusing, especially from the medicolegal viewpoint. The book itself is somewhat pedestrian and outdated. While it gives many interesting and practical points that should be useful to general practitioners, there is a striking lack of information regarding the recent advances in the field. The author is apparently still hesitant about the extension of indications for examination of the spinal fluid. This was somewhat of an academic matter in the past; but with modern therapeutic opportunities the differential diagnosis of strokes should be improved, and the spinal tap is an important step in this direction. The risk attending the removal of 5 to 10 cc. of fluid slowly is slight, and the information gained may be highly significant. There is little emphasis on the syndromes of basilar or carotid artery occlusions that are now being more widely recognized and studied. Intermittent or small strokes, which are extremely common, are not considered in any detail. The author rightly doubts that ligation of the carotid artery is a satisfactory procedure for any more than a few cerebral vascular aneurysms. It does not usually thrombose the aneurysm. If it does, there is a grave risk of hemiplegia or other serious permanent changes. In spite of these objections, in exceptional cases, it does appear to improve the situation. There is no evidence that the author is familiar with the increased use of anticoagulants for cerebral thrombosis and embolism. He discusses some of the underlying causes of strokes, but he does not mention auricular fibrillation due to rheumatic or arteriosclerotic heart disease, very common causes of embolism that can frequently be prevented by the use of anticoagulant therapy. It is regrettable that this manual, which could have been up-to-date and helpful, fails to meet its challenge.

**The Rochester Regional Hospital Council.** By Leonard S. Rosenfeld, M.D., M.P.H., and Henry B. Makover, M.D. Cloth, $3.50. Pp. 204, with 1 illustration. Published for Commonwealth Fund by Harvard University Press, Cambridge 38, Mass.; Oxford University Press, Amen House, Warwick Sq., London, E.C.4, England, 1956.

The Rochester Regional Hospital Council is a group of 34 nonfederal general hospitals and 10 special hospitals in an 11-county area around Rochester, N. Y., that constitutes a unique voluntary regional cooperative organization. It was begun in 1946 under the guidance of the late Dr. Albert D. Kaiser, health officer of Rochester, with financial support by the Commonwealth Fund. The purposes of the council were to improve medical services in small suburban and rural hospitals by pooling of clinical, administrative, and technical skills; by joint operation of those institutional services that can be performed more efficiently by the group than by the individual institutions; by joint planning of hospital building and expansion; and by continuing educational programs for the physicians, nurses, technicians, and administrators. It was originally conceived as a complete regional organization with equal emphasis on medical services and on continuing education, rather than being primarily educationally oriented as had been the Bingham Associates plan between Boston and Maine. However, the reluctance of the University of Rochester School of Medicine and Dentistry to assume primary responsibility has limited the educational potential of the council so that it has been more effective in the institutional services than in the educational sphere. It thus represents a complement of the Bingham Associates program. This book is the report of a study of the council by the Columbia University Institute of Administrative Medicine made at the request of the Commonwealth Fund. It describes the history of the program, the area served, the organization of the council, and its programs of education and hospital services. Interwoven in this are evaluations of the effectiveness of the program. The study concludes that, in the face of many complex problems, the Rochester regional program is probably the broadest program of its kind in the United States and that it has made significant contributions to experience with this form of organization: "Out of this wealth of experience, potentialities can be much more clearly visualized, and obstacles and problems much more precisely measured. The experience provides a most valuable resource upon which other regional programs as well as the Rochester Regional Hospital Council can draw in future planning."

**Tuberculosis in Obstetrics and Gynecology.** By George Schaefer, M.D., F. A. C. S., F. I. C. S., Assistant Professor of Clinical Obstetrics and Gynecology, Cornell University Medical School, New York City. Cloth. $8.75. Pp. 307, with 58 illustrations. Little, Brown & Company, 34 Beacon St., Boston 6; J. & A. Churchill, Ltd., 104 Gloucester Pl., Portman Sq., London, W.1, England, 1956.

Two decades have passed since the publication in English of a book on tuberculosis as it relates to obstetrics and gynecology. In this period, monumental advances in knowledge of this disease have been made, especially in methods of treatment. The busy obstetrician and gynecologist cannot read all the literature and arrive at the proper plan of management in a given patient. Only with difficulty does even the phthisiologist become conversant with all the phases of tuberculosis encountered in obstetric and gynecologic practice. The author ably presents this newer knowledge in practical and concise fashion, and his personal experience in recovering from tuberculosis has been helpful. The advent of antimicrobial and surgical therapy has brought many patients from sanatoriums, where they were previously treated, into general hospitals. Of the changes in management of the tuberculous patient, few have been so marked as those in obstetrics and gynecology. No longer is tuberculosis considered an indication for therapeutic abortion or cesarean section. The introductory chapter of this book contains a brief review of tuberculosis in general, and its treatment is presented as a background for the material subsequently covered. The final answers to many of the problems are not yet at hand. The author has kept in mind simplicity and lucidity in presenting facts. The chapters deal with the incidence of tuberculosis complicating pregnancy and childbirth, antepartum care of the tuberculous woman, management of labor, management of the puerperium, effects of pregnancy and childbirth on tuberculosis, fate of infants, extrapulmonary tuberculosis and pregnancy, therapeutic abortion, tuberculosis of the breast, pathogenesis of genital tuberculosis, and treatment of tuberculosis of the female genital tract. This valuable textbook fills a definite need.

**Techniques in Blood Grouping.** By Ivor Dunsford, Senior Scientific Officer, Regional Blood Transfusion Centre, Sheffield, England, and C. Christopher Bowley, M.B., B.S., M.R.C.O.G., Director, Regional Blood Transfusion Centre, Sheffield. With preface by R. R. Race, F.R.S., Director, Medical Research Council, Blood Group Research Unit, London. Boards, spiral binding. $4.50. Pp. 250, with 27 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1955.

With the development of new methods of detecting isoantibodies that are capable of causing hemolytic transfusion reactions or of causing the development of erythroblastosis in a newborn baby, there is need for an up-to-date manual that presents the best techniques in readily accessible form to the busy blood bank technician. This book is a mine of such information, clearly and conveniently presented. Its usefulness is impaired, however, by its reiteration of the misinformation and misconceptions that have marred blood group literature in recent years. On page 6, there is a good discussion of the difference between an agglutinogen and a blood factor, but this seems to be forgotten in the remainder of the book, since the authors adhere to the simple but incorrect concept of a one-to-one correspondence between antigen and antibody. The C-D-E notations for the Rh-Hr types and their attendant paradoxes are the natural

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

sequel of the fallacious premise adopted by the authors. Some of the resulting serious errors in the manual are as follows: On page 4, in figure 1, antigens and blood factors are confused so that, for example, under the heading "genes or antigens discovered" are listed O, $O^c$, and H. Under the Rh types, little d is significantly listed as a gene postulated and not as one discovered, yet the symbol for little d is included in the C-D-E notations used in the book. In figure 3, "natural" and "immune" antibodies are erroneously equated with "bivalent" and "univalent" antibodies respectively. Throughout the book the Rh-Hr types are given in terms of the C-D-E symbols as genotypes rather the phenotypes. On page 84, in the recommended outline of a course of lectures on blood banking, one of the lectures recommended deals with "The heredity of the blood group systems—the Fisher theory"; but there is no mention of the theory of multiple allelic genes even though it has been amply demonstrated that Fisher's cross-over hypothesis is incorrect, while all the available evidence supports the theory of multiple alleles. And on page 172, serums cross reacting with types $Rh_1$ and $Rh_1^w$ are designated anti-C+$C^w$ even though such serums are known to contain a single cross reacting antibody and not two separable antibodies like anti-$Rh_0$ (anti-C+D). These errors destroy the usefulness of the volume.

**New and Nonofficial Remedies: Containing Descriptions of Drugs Evaluated by the Council on Pharmacy and Chemistry of the American Medical Association, 1956.** Annual publication issued under direction and supervision of Council. Cloth. $3.35. Pp. 540. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; 2083 Guy St., Montreal, Canada, 1956.

This edition reflects the new program of the Council on Pharmacy and Chemistry, which involves expansion of evaluation of drugs, replacing the former procedure of accepting individual formulations of manufacturers for inclusion in the book. All evaluated drugs are described under generic (nonproprietary) names in the form of monographs, which follow essentially the style of former editions. To aid physicians and others interested, such trade names as are known to the Council appear at the end of each monograph. Both generic and trade names appear in the index, which is complete and well arranged. A concise statement of the principles governing the program of evaluation is included in the preface. Fifty-eight new monographs have been added to this edition. Among the more notable are those for alseroxylon and reserpine of the Rauwolfia group of alkaloids, chlorpromazine, fludrocortisone, prednisolone and prednisone, nystatin, and warfarin. The volume is a striking illustration of the advantages offered in the Council's new program. In previous editions of the book, new monographs were limited to those on established drugs; in the current and future editions information can be included concerning all available new drugs, whether established or unestablished. Monographs on unestablished drugs are subject to revision as their status changes. Publication of these changes in THE JOURNAL will make such information more readily available to the physician.

**Surgery of the Eye—Diseases.** By Alston Callahan, B.A., M.S., M.D. Cloth. $25. Pp. 447, with 282 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, Canada, 1956.

The preparation of a textbook on modern ophthalmic surgery requires a comprehensive knowledge of traditional surgical techniques and of the recently developed methods of preoperative and postoperative management of surgical patients. That the author of this book possesses that knowledge is evident from the detailed description of operations that are commonly performed by the well-trained surgeon and from the discussions of surgical diagnosis in the light of new facilities for operation—anesthesia, antibiotics, antiseptics, tranquilizers, hospital care, and a number of factors that are now available but were unknown when most textbooks on ophthalmic surgery were written. The latest developments in safety and avoidance of undesirable side-effects of all procedures are clearly described, with bibliographic references to current literature. The chapters on reconstructive and plastic surgery are particularly well illustrated by drawings and photographs that provide a complete descriptive analysis of complicated operations. Only a surgeon with extensive experience could accomplish so much with so few words; the book is comprehensive without being bulky. The chapters on cataract surgery could have been shortened, as the description of cataract operations is repetitious; but the author has discussed only the operations most widely accepted, and these he has presented with accuracy and understanding. He states his preferences for certain techniques and often adds "gimmicks" of his own. The anatomic arrangement of subjects is a great help in looking up complications. The type used makes for easy reading. The book is recommended for all ophthalmic surgeons.

**Fractures of the Facial Skeleton.** By N. L. Rowe, F.D.S.R.C.S., L.R.C.P., M.R.C.S., and H. C. Killey, F.D.S.R.C.S., L.R.C.P., M.R.C.S., Consultants in Oral Surgery, Plastic and Maxillofacial Surgery Unit, Rooksdown House, Basingstoke, Hants, England. With foreword by Sir Reginald Watson-Jones, B.Sc., M.Ch.Orth., F.R.C.S. Cloth. $22. Pp. 923, with 1231 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1955.

This is a comprehensive, well-written, and readable textbook compiled by two British oral surgeons. The first two parts deal with the classification, applied anatomy, treatment, and complications of facial fractures and are based on a survey of 500 consecutive peace-time accidents. The authors direct attention to the combined surgical-dental approach to the severe maxillofacial injury. Most American plastic surgeons would not concur with the authors in the management of some of their cases, particularly in the use of external head-cap and traction devices. Although part 3 has sections written by two noted British plastic surgeons, Sir Harold Gillies and Mr. Patrick Clarkson, their contributions are superfluous in such a book. Their material on gunshot wounds of the face and late restorative plastic procedures should be relegated to a military manual or a textbook on reconstructive surgery and should not be included in the treatment of jaw fractures. The book is well indexed and has an exhaustive bibliography and an abundance of descriptive illustrations. It contains much information of value to the surgeon who treats maxillofacial injuries, but it emphasizes the treatment of facial injuries from the dental, rather than the surgical, viewpoint.

**The Menninger Story.** By Walker Winslow. Cloth. $5. Pp. 350, with 16 illustrations. Doubleday & Company, Inc., Garden City, N. Y.; 575 Madison Ave., New York 22, 1956.

This story of Dr. C. F. Menninger, founder of the Menninger Clinic in Topeka, teaches that a dedicated spirit can overcome great obstacles. Dr. Menninger became a physician only after having given up the study of law and after a promising career as a teacher. He never lost sight of his mission, which was to be prepared at all times to do his best for his patients. As a result he never stopped studying, and he never stopped teaching. Although the clinic he founded is now one of the outstanding psychiatric centers in the world, the patient is treated as a whole person—body, mind, and spirit; and far from just receiving the domiciliary care that was once the beginning and end of all psychiatric treatment, the patient at the Menninger Clinic is expected to get well and usually does. The story is interestingly told, with a wealth of intimate detail. It is written for physicians and laymen alike and will be an inspiration to some students of medicine. A collection of photographs is inserted in the center of the book and adds to the interest. On page 89 "placenta previa" is misspelled in two places. The book has an index.

**Therapeutic Use of Artificial Radioisotopes.** Edited by Paul F. Hahn, Ph.D. Cloth. $10. Pp. 414, with illustrations. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C.2, England, 1956.

Six general introductory chapters summarize the physics and biology of the radioactive isotopes now used in therapy. Of these, the fifth, on the production and handling of these extraordinary materials, is especially necessary reading for the physician. Subsequent chapters deal with various modes of administration (for instance, the intracavitary use of radioactive colloids), with particular isotopes (teletherapy with cobalt=60), and with particular diseases (leukemia, prostatic carcinoma, and thyrotoxicosis). The information is copious, concrete, and clearly stated, and the editing has been so skillful that the reader is quite unaware of the multiple authorship. The illustrations and index are excellent. The book is highly recommended.

# QUERIES AND MINOR NOTES

## HYPOPARATHYROIDISM

To the Editor:—*What is the medical treatment of choice for hypoparathyroidism following inadvertent removal of the parathyroids in a patient at the time of thyroidectomy? Is it feasible to transplant normal parathyroids into such an individual?*

*M.D., Florida.*

Answer.—Hypoparathyroidism, or parathyroid tetany, is treated by the combination of calcium lactate and dihydrotachysterol or vitamin D given by mouth. Initially, 40 to 60 gm. of calcium lactate, together with two to three capsules of dihydrotachysterol or 50,000 units of vitamin D, is given each day. After three to four days, when the level of calcium has reached the normal range, the amounts of the drugs are reduced until the proper dosage is found that will maintain the level of calcium between 9 and 10 mg. per 100 cc. of serum. The usual maintenance dose of calcium lactate is about 36 gm. per day, and one capsule of dihydrotachysterol or 50,000 units of vitamin D is required each day or every other day. Frequent determinations of the concentration of calcium in the serum are necessary until the proper amounts of the drugs have been established. After this time, an occasional determination is necessary to be certain that the level of calcium remains satisfactory. Serious complications may develop if the level of calcium is permitted to remain either above or below the normal range. The daily dose of calcium lactate should be dissolved in 1.5 to 2 pt. of boiling water. The solution is allowed to cool and is taken throughout the day. Acute symptoms of tetany may be controlled by giving one or two ampuls of 10% calcium gluconate slowly and intravenously. Tetany that develops after thyroidectomy may be temporary. Treatment should be discontinued gradually after four to six weeks, to determine whether further treatment will be required. If symptoms recur, treatment is, of course, reinstituted. Another attempt to discontinue treatment should be made in perhaps four months. If treatment is still necessary after this interval, the tetany probably is permanent and treatment must be continued for the remainder of the patient's life. It is not feasible to transplant parathyroid tissue from one person to another unless donor and recipient are identical twins; however, one apparently successful case has been reported (Sterling, J.A., and Goldsmith, R.: Transplantation of Homologous Thyroid and Parathyroid Glands (Case Report), in Transactions of the American Goiter Association, Springfield, Ill., Charles C Thomas, Publisher, 1954, pp. 477-483).

## FURUNCULOSIS

To the Editor:—*What is the accepted treatment of a furuncle and furunculosis? At the student infirmary at Alabama Polytechnic Institute our previous treatment has been the intramuscular administration of 400,000 to 600,000 units of crystalline procaine penicillin G (Duracillin) as indicated, along with the other measures used in these cases. The reason I want this information is to try to avoid a severe reaction to penicillin.*

*Morgan W. Brown, M.D., Auburn, Ala.*

Answer.—If it is necessary or desirable to avoid the use of penicillin, one may employ orally given broad-spectrum antibiotic agents such as tetracycline or oxytetracycline in divided doses from 0.5 gm. to 1.0 gm. per day until the infection subsides. If the individual lesion is fluctuant, drainage should be established by incision in the dependent portion; if the lesion is not ready to be incised, hot compresses should be applied several times a day. When drainage is completed, the topical application of an antibiotic ointment, preferrably one containing bacitracin, which is not often used systemically, is of value. Superficial x-ray therapy administered by one skilled in this type of treatment often hastens involution of furuncles. Routine urinalysis should be done in these patients to rule out diabetes. Reduction of carbohydrate intake is sometimes of value in the chronic recurrent cases.

## SMALLPOX VACCINATION

To the Editor:—*A 17-year-old girl is required to have smallpox vaccination as part of her college preparation. She gives a history of having been vaccinated in infancy, with a subsequent illness whose description is suggestive of postvaccinal encephalitis. She has not since been vaccinated, and I would like to know whether it is advisable to attempt it now and if any precautions should be taken. She is in excellent health except for a pollen hayfever.*

*S. Theodore Sussman, M.D., New Rochelle, N.Y.*

Answer.—First it would be advisable to determine if the girl has a characteristic vaccination scar. If a primary vaccination was successful, a secondary vaccination at this time would in all likelihood be of the accelerated type, provided the inoculation was effective. Therefore there should be very little local or systemic reaction. Many years ago there was what might be called "an outbreak" of encephalitis following smallpox vaccination in Denmark and Sweden. There were also some similar cases in England. At the same time the Ministry of Health in England advised against doing any primary vaccination in adults except in cases of emergency; i.e., exposure to smallpox. In this country postvaccinal encephalitis due to smallpox vaccine has been very uncommon. Some years ago smallpox vaccine produced in chick embryo was available. One of the objections to its use was the possibility of severe reactions in allergic individuals who were sensitive to egg. For the girl mentioned, inoculation with calf vaccine by the multiple-pressure (not puncture) method should be a safe procedure.

## TARRY STOOLS, VOMITUS, AND BLOOD GROUPS

To the Editor:—*Can a person's blood group be identified from his tarry stools or from his bloody vomitus when the blood has already turned black due to the action of the gastric juice ("coffee-ground" emesis, chocolate-colored vomitus)? If one cannot identify the blood group, can he say at least whether the blood in the vomitus or in the stool is of human or animal origin? Can one perform these tests in any laboratory, or do the specimens have to be sent to a special laboratory?*

*M.D., Ohio.*

Answer.—Once blood has been hemolyzed it is no longer possible to prepare blood suspensions that can be typed directly for any of the known blood factors. Nevertheless, under favorable conditions it may still be possible to determine the A-B-O groups. This depends on the fact that in about 80% of all Caucasoids the A-B-O blood group substances are present in water-soluble form in high concentration in such secretions as saliva and gastric juice. Therefore, if vomitus, whether or not it contains blood, is brought to a neutral pH and then titrated, the ability of such material to inhibit the agglutination of group A cells by anti-A serum, and group B cells by anti-B serum, can readily be determined. For example, if high saline dilutions of gastric juice inhibit the reaction of anti-A serum but not anti-B serum, then the gastric juice must have come from a group A individual. On the other hand, if anti-B serum is inhibited but not anti-A, the individual in question belongs to group B. If both antiserums are inhibited the group is AB, but one must be careful to exclude the possibility of nonspecific inhibition. Failure of the juice to inhibit either anti-A or anti-B indicates that the individual is either group O or a nonsecretor. The distinction between group O

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

and nonsecretor can readily be made with the aid of extracts of seeds such as Ulex europea that have the property of strongly clumping group O cells. The clumping of group O cells by these seed extracts is inhibited by high dilutions of gastric juice or saliva from secretors of any of the four blood groups, but not by nonsecretors. The same principles apply to the examination of stools, whether or not they contain blood. However, one must bear in mind that stool consists largely of bacteria and undigested food. Since the soluble blood group substances are heat-stabile mucopolysaccharides, the stools may be extracted with boiling water and the extract clarified by filtration. This may then be exaporated to dryness in a steam bath and the residue taken up in a small amount of saline solution. The extract obtained is then tested by the inhibition technique already described for its ability to inhibit anti-A, anti-B, and anti-O (Ulex europea) serums. Such examinations on stools must be interpreted with caution, because many bacterial species produce capsular polysaccharides having A-like and B-like activity, while other bacteria produce enzymes that destroy the blood group substances. Considerable experience would be required to obtain reliable results in these examinations, especially since there is no precedent for such tests, so that the work would be almost entirely of an experimental nature. Therefore, it probably would be best to submit such problems to individuals specializing in the blood-grouping field. To establish the human origin of such material would depend on the use of the precipitin test. It seems doubtful that bloody vomitus or tarry stools would give reliable reactions in this test, which depends on the presence of undenatured serum proteins of human origin. Moreover, since the occasion to perform such tests has apparently not arisen in the past, there are no published reports on this specific problem.

## ROUTINE BLEEDING AND CLOTTING TIME

To the Editor:—*I would be interested to know the feelings of various authorities on the preoperative precautions to take regarding the ruling out of any potential bleeding or clotting difficulty. It is my feeling as a hematologist that the routine bleeding and clotting time perfunctorily performed yield little information of value and that a few well-chosen questions and evaluation of a peripheral smear would really be more valuable. It is not clear to me what position, if any, has been taken on this question, particularly with reference to the satisfying of any legal requirements.*

*Frank E. Trobaugh Jr., M.D., Chicago.*

This inquiry was referred to three consultants, whose respective replies follow.—Ed.

Answer.—The question is an extremely pertinent and timely one but very difficult to answer. Even though the routine bleeding and clotting time perfunctorily performed yield little information of value, one must recognize that to rule out any potential disturbances in the clotting or bleeding mechanism would involve entirely too much work for preoperative routine. As far as the platelet count is concerned, the technician can, with practice, estimate it from a stained blood smear with sufficient accuracy to divide all patients into those with low, normal, and high counts. This should be part of all blood smear studies. Concerning the bleeding time, if carried out with rigidly controlled technique, it does yield valuable information. As far as the coagulation time is concerned, undoubtedly a minor clotting defect would not be picked up even by an accurately carried out test of venous clotting time. It becomes therefore imperative, by thorough questioning of the patient, to elicit any evidence of previous bleeding tendencies. In both children and adults, when any doubt exists, it seems reasonable to use Lee and White's three-tube method of determining coagulation time at 37 C, using preferably siliconized containers. This is considered essential as a preoperative procedure only when thorough questioning elicits any history of a previous bleeding tendency. In a child, however, where bleeding tendencies might not as yet have manifested themselves and where obtaining a good venous blood sample; i. e., without stasis, is not always a simple task, a screening test such as afforded by determining the coagulation time with two capillary tubes, with blood obtained with a deep skin puncture, appears acceptable as a compromise. This would pick up severe coagulation defects, although it would miss the minor ones. So far as known, this procedure, faulty as it is, satisfies legal requirements.

Answer.—The inquirer has virtually answered his own question. A carefully taken history of bleeding episodes and a physical examination for purpuric manifestations, together with an examination of the peripheral smear, would be highly valuable as a preoperative measure in the estimation of potential bleeding. It is true, however, that a carefully performed test of bleeding time and estimation of prothrombin concentration and clotting time would add substantially to the search for possible bleeding difficulties.

Answer.—The law requires that a physician who undertakes to diagnose or to treat a patient must possess the skill and exercise the care commonly possessed and exercised by other reputable physicians in the locality. If he holds himself out as a specialist, he must meet the standards of practice of other specialists in the designated field of practice. Thus, the answer to your question from the legal standpoint is that a physician must meet the requirements of good medical practice in any service he furnishes a patient. These requirements are based on what other reputable physicians in the community, or in similar communities, would or would not do in the care of similar cases.

## DOUCHES

To the Editor:—*In my search for a simple astringent douche I find aluminum acetate solution (Burow's solution) effective. I use it diluted 20 to 1. Is there any better preparation for a simple, clear, not infected oversecretion of mucus?*

*M. D., California.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—While Burow's solution in the dose mentioned is probably not toxic, why use any astringent douche for a "simple, clear, not infected oversecretion of mucus?" Incidentally, this consultant has never heard or seen any recommendation of Burow's solution for purposes of douching. If there is really an oversecretion, without infection, it may be the hypersecretion that is so often noted at the ovulation phase, this needing no douching at all. If there is really sufficient oversecretion to constitute an annoying problem, some simple douche such as bicarbonate of soda, boric acid or saline solution would seem more sensible than anything like Burow's solution. One of the most popular, safest, and most pleasant douching solutions is that of ordinary household vinegar (either white or brown) in a proportion of about 4 tablespoonfuls to 2 qts. of very warm water.

Answer.—Douches are unphysiological and often harmful in that they do no physiological good and often cause the conditions for which they are prescribed. The vagina is a closed organ with muscular supports and during most of the day drains by gravity. The normal vaginal secretion contains cellular debris, mucus, and bacteria; namely, the Döderlein bacillus. Douches, medicaments, infections, and infestations disturb this normal flora. Cyclic changes occur at or near ovulation. The mucus becomes clear and watery; during the remainder of the cycle it is more tenacious. All of this is normal. Occasionally, a woman will have an increase in mucus secretion because of unrecognized or nonadmitted emotional sexual stimulation.

If discharge is present, treatment should be aimed at clearing up such conditions as cervical disease and vaginal infestations. Douches tend to increase mucus secretion, especially astringent douches, because the moment the vagina becomes dry more mucus is poured out. Irritating medicaments do the same. In occasional cases, slight urinary incontinence causes irritation and added mucus secretion. Partial cervical amputations are occasionally indicated, and plastic operations sometimes solve the problem; but, in this consultant's experience, douches, never. Twice daily cleansing of the vulva usually is all that is necessary. Many women emotionally consider douching essential to cleanliness. A little training is all that is necessary to correct this belief in most women.

## TREATMENT OF TRICHURIASIS

To the Editor.—*What is the treatment for infection with Trichuris trichiura?* *M.D., Missouri.*

Answer.—Trichuris trichiura, called Trichocephalus trichiurus by Dr. E. C. Faust and commonly known as the whipworm, is found frequently in southern United States and since 1950 it is being found with increasing frequency in northern areas. Whipworms are resistant to treatment. They inhabit the large intestine, chiefly the cecum, where, covered by mucus and slimy feces, they take refuge and find protection. Also, they are firmly anchored in the mucosa by the interlacing attachment of their anterior attenuated portions. Often anthelmintics given by mouth do not reach the large intestine in concentrations sufficient to kill or dislodge the worms. The first step in treatment is to dissolve the mucus and slime that cover the worms. This is accomplished by administering a saline cathartic the night before, preferably sodium sulfate (Glauber's salt), 15 gm. (0.5 oz.) in a full glass of water for adults. The following morning, on an empty stomach, the patient should be given 3 cc. of a mixture consisting of 0.3 cc. of oil of chenopodium and 2.7 cc. of tetrachloroethylene in soft gelatin capsules. No food or carbonated drinks should be given. Two hours later the saline purge is repeated. Food may be taken after successful evacuation of the intestines after the second cathartic. The stools should be examined to see if adult worms have been dislodged. Adult worms are 1 or 2 in. in length. The longer anterior portion is attenuated and coiled, while the posterior two-fifths is larger in diameter and fleshy.

If the infestation resists oral treatment, high retention enemas may prove more satisfactory. The night before, administer a saline purge. In the morning first give a cleansing tap water or normal saline enema followed by a high retention enema. Prepare 600 cc. of a 10% solution of mucilage of acacia to which is added 2 gm. of crystalline hexylresorcinol and 60 gm. of fine kaolin. When the enema is given, the foot of the bed should be elevated to assist the fluid in reaching the cecum. It should be retained for at least half an hour. A mild sedative sometimes is beneficial. It may be necessary to repeat the enema four or five times on alternate days. In Central and South America the drug of choice is leche de higuerón, which has a proteolytic enzyme action. This drug is not available in the United States.

Another method that gives fair results is as follows: 1. Give saline purge the night before. 2. Give crystalline hexylresorcinol in the morning on an empty stomach (adults, five 0.2-gm. capsules; children, 0.1 gm. per year of age up to 10 years). 3. Two hours later repeat saline purge. 4. In the evening of the same day give a cleansing soapsuds enema followed by a retention enema of 500 to 1,000 cc. of a 1 to 1,000 solution of crystalline hexylresorcinol. 5. Three days later give another retention enema. Often it is necessary to repeat the treatment once or twice. These worms live for many years, so it is worthwhile to try to get rid of them.

## COMPLICATIONS IN DIABETICS

To the Editor:—*The standards used for the treatment of diabetics seem to be contradictory. Strict control with carefully calculated diets, along with administration of insulin in sufficient amounts to keep the blood sugar level within normal limits and the urine sugar-free, is advocated by some, while Edward Tolstoi, in a monograph published in 1953, states that hyperglycemia and glycosuria can be disregarded, providing the patient feels well and maintains his weight and there is no ketonuria. What causes the complications that shorten the lives of diabetics? Are they the result of a lessened supply of insulin, or is the high blood sugar level at fault?*

*H. O. Closson, M.D., Glen Burnie, Md.*

Answer.—The cause of the vascular complications in diabetes is not known with certainty. The best evidence indicates that good control of glycosuria and hyperglycemia prevents, minimizes, or postpones vascular disease, while poor control aggravates and accelerates it. For example, Root, Pote, and Frehner (*A. M. A. Arch. Int. Med.* 94:931 [Dec.] 1954), in a study of retinopathy in 189 patients with diabetes of 20 to 29 years' duration, found that retinopathy was absent or minimal in 76% of patients whose diabetes had been well controlled as compared with 33% of patients with poorly controlled diabetes. On the other hand, retinopathy was moderate, marked, or extreme in 24% of patients whose condition was well controlled and in 67% of patients whose condition was poorly controlled. These are the most comprehensive and carefully gathered data available. They clearly show the importance of minimizing glycosuria in the prevention of diabetic retinal disease, and comparable data lead to similar conclusions insofar as renal disease and atherosclerosis are concerned. At the same time, the figures just cited indicate that good control does not necessarily guarantee immunity from vascular disease, since 24% of the patients in this category have well-marked retinopathy; nor, apparently, does poor control invariably lead to vascular degeneration, since 33% of the patients in this category had no, or slight, retinopathy. It is exceptions of this sort that have led to the hypothesis that the tendency to the development of vascular disease may be a hereditary or constitutional matter, passed on from one generation to another in much the same way that diabetes itself is genetically transmitted. This theory can be neither proved nor disproved at present.

The chemical factor in uncontrolled diabetes that is responsible for the characteristic vascular lesions has not been identified. There is a good deal of evidence that elevated levels of serum lipids, both in nondiabetics and in diabetics, have something to do with arteriosclerosis. Hyperlipemia in the treated diabetic, however, is neither so common nor so marked as has been popularly supposed, and it is doubtful that this is the prime cause of arteriosclerosis in this disease and even more doubtful that it is concerned with the renal and retinal lesions. Some patients with the latter types of lesions are reported to have increased concentrations of serum mucopolysaccharides, but work in this field is not sufficiently advanced to justify conclusions. The subject as a whole has been recently reviewed by Ricketts (*Am. J. Med.* 19:933 [Dec.] 1955).

## INHERITANCE OF SKIN COLOR

To the Editor:—*My brother-in-law and his wife, both of whom are white, had a child who is definitely colored about three and a half years ago. In this case, neither person knows of any intermarriage of white and colored as far back as they can trace. My husband and I have two living children and lost one baby at birth. All three of our children have been perfectly normal. My brother-in-law and his wife also have had three children; two who are perfectly normal and the one to whom I referred above. It appeared in their second child. We hesitate to have more children until we know on which side the colored blood exists. Also, even though the appearance of the colored strain has not shown in our children, if it does happen to be on my husband's side, could it appear in my children's children?* *Maryland.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—It is difficult to give a straightforward answer to the query presented because the facts are uncertain from the information provided. For example, there is a semantic problem, since no two persons would interpret "definitely colored" in the same way. The expression "definitely colored" represents a subjective emotional opinion rather than an objective scientific finding. Physical differences between Caucasoids and Negroids depend on the combined action of numerous genes. Mulattoes have a physical appearance intermediate between their Negroid and Caucasoid father and mother, because they inherit half of the genes from one parent and half from the other. A quadroon results when a mulatto crosses with a white person, because one-fourth of his genes will be derived from the Negroid grandparent and three-fourths from the other three Caucasoid grandparents. An octoroon results when a quadroon crosses with a Caucasoid, because one great-grandparent is Negroid while the remaining seven great-grandparents are Caucasoids. Quadroons and octoroons may differ widely in appearance depending on which genes they inherit from the Negroid and Caucasoid ancestors. Therefore, it is difficult to state how many Negroid

ancestors an individual must have in order that the presence of Negroid characteristics may be recognizable, since, for example, a "pure" Caucasoid after exposure to the sun may look considerably darker than an octoroon.

From the above consideration, it should be clear that, if one parent has no Negroid ancestors while the other parent has Negroid ancestors, none of the children will appear more Negroid than the parent with the Negroid ancestry. Therefore, in the problem case discussed, one may well challenge the statement regarding the child who is said to be "definitely colored" because when two "pure" Caucasoids have a "colored" child, blood grouping tests on the child and supposed parents may prove to exclude parentage. It would be advisable to consult a qualified physical anthropologist to determine whether the characteristics interpreted as evidence that the child is "definitely colored" constitute a valid basis for this inference. At any rate, if from the appearance of the parents it is impossible to determine whether they have any Negroid ancestry, concern regarding the appearance of Negroid characteristics in the child seems unwarranted.

ANSWER.—Detailed studies made in Bermuda on the inheritance of skin color in Negro-white crosses by Davenport led him to exclude the possibility of a "throw-back" in the children of mates that are apparently white but who have a history of remote intermixture with Negro blood. He investigated this question of dark children being born to a pure-bred white married to an extracted white, the name given to a person in whom Negro blood has been diluted beyond recognition. The conclusion was reached that the idea of "reversion to black" is mythical. The instances in which this was reported to be true turned out to be children of persons who were light-colored but who were definitely Negroes.

An analysis of the mode of inheritance of skin pigmentation indicated that black pigmentation is represented by four inheritable genetic factors and that genotypes consist of either an absence of these factors (the pure-bred white) or the presence of one, two, three, or four of the factors corresponding to various degrees of skin color. It is understood that a person who is to all appearances pure white has no factor for skin pigmentation and is therefore incapable of transmitting such a factor to his progeny.

## DUPUYTREN'S CONTRACTURE

TO THE EDITOR:—*Can a Dupuytren's contracture of the palmar fascia result from a Colles' fracture of the wrist?*

*Leland G. Brown, M.D., Muncie, Ind.*

ANSWER.—After more than a century since Dupuytren described the fascial contracture that goes under his name, we are still no closer to absolute knowledge concerning its etiology. Studies from numerous sources furnish confusing and contradictory evidence. Efforts to establish a relation between the repetitive trauma of manual labor have led some to favor such a factor on the assumption that the individual has a predisposition to the disease. However, all such studies do not warrant this assumption. Most surgeons who have had experience in the care of Dupuytren's contracture reject the chronic traumatic origin. Although a few patients will give a history of some sort of injury to the palm, frequently the condition will be found to be present on the other palm as well. Fractures of the upper extremity have been noted in the history of patients developing Dupuytren's contracture. Kohlmayer (*Zentralb. f. Chir.* **62**:1928, 1935), in a study of 110 men with fractures of the radius, found 5.4% developed the contracture and, of 530 women with radius fractures, 0.75% developed the contracture. It hardly seems justified to assume causal relationship from these figures, especially since two of the men had bilateral contractures. The tendency to incriminate injury is especially great when compensation is concerned. Many cases of Dupuytren's contracture are seen in which there is no history of fracture and in which their association can be ascribed to fortuitous coincidence. One cannot deny that a Colles' fracture may be followed by the development of the contracture, but this is no proof of causal relationship; the contracture would have developed without the fracture. Most evidence points to some other cause than trauma. The facts that it occurs most often bilaterally and that, in reported series of cases, 10 to 40% of patients give a history of familial occurrence suggest strongly that there is a hereditary influence. In fact, it has been traced through as many as five generations in a family and has been reported in identical twins. It is not clear whether the inheritance is dominant or recessive; however, it may be sex-linked, since it is more frequent in men than in women. Recent study (Gordon, S.: *Ann. Surg.* **140**:683, 1954), however, seems to cast doubt on the general assumption that it is so rare in the female. Its bilaterality, its occurrence in nonmanual workers as often, at least, as in manual laborers, its development in the later years of life, its infrequency despite the frequent traumas to which all hands are subject, and the occasional association of plantar fascial thickening and knuckle pads all speak against trauma as a cause and emphasize that, while it may not be known as to what causes Dupuytren's contracture, it is pretty well known what does not cause it.

## TREATMENT OF INTERSTITIAL KERATITIS

TO THE EDITOR:—*Please give the latest source for proper treatment of a case of interstitial keratitis in congenital syphilis (lues).*

*M.D., Oklahoma.*

ANSWER.—North (*Brit. M. J.* **2**:7, 1954) describes very gratifying results that follow the treatment of interstitial keratitis with cortisone. Twenty patients with this condition have been treated and observed for at least a year, and eight cases are reported. It is stressed that antisyphilitic treatment seems to have little effect on the course of this condition. Treatment with cortisone brings about a rapid relief of symptoms and the disappearance of the signs of inflammation, thereby reducing the possible amount of corneal scarring. Whether cortisone cuts short the duration of the disease is not established. The disease can recur and must be treated with further courses of cortisone therapy. Although antisyphilitic treatment barely affects the course of the condition, such treatment still has to be carried out in conjunction with cortisone therapy; the patients here in question received something like 8 million units of penicillin and some had more. Patients with severe cases were given cortisone by subconjunctival injection in doses of 10 mg. every third day, and this was continued until the eye was obviously settling. Relief appeared quickly, and, as it did so, the amount of treatment was reduced. After about the third subconjunctival injection, eyedrops of 5 mg. per milliliter were instilled hourly by day and reduced as the condition improved. It would appear that, if treatment can be started before corneal infiltration obscures the vision, the eyesight is not ultimately impaired.

Klauder and Meyer (*A. M. A. Arch. Ophth.* **51**:432 [April] 1954) treated 36 patients with acute interstitial keratitis by various means. Corticotropin given to three patients in dose ranges of 450 to 670 mg. over a period of 9 to 15 days was without definite benefit. Cortisone injected subconjunctivally in doses of 1.3 mg. daily for three days with or without repetition for another three days was also without effect in six patients. Application of cortisone drops containing 25 mg. per milliliter instilled every hour during the day and every two hours during the night in 13 patients led to dramatic clearing of the cornea and subsidence of the inflammation. However, the incidence of recurrence was "much higher" in cortisone-treated patients, hence this method of treatment is inadvisable. The rationale of thyroid therapy is based on the low metabolic rate, the low protein-bound iodine in the serum, and the low iodine uptake found in at least several of the present cases and in others reported in the literature. Administration of 120 to 200 mg. of thyroid daily was found to be beneficial when combined with fever therapy. Previously it has been reported that there is less acne in patients with interstitial keratitis than in normal persons. On this basis three patients, all females, were treated with weekly injections of 25 mg. of testosterone cyclopentylpropionate. The effects were of equivocal benefit. Fever was induced from 4 to 14 times by injection of colon bacillus vaccine (Pyrifer). This, combined with the metal chemotherapy and penicillin therapy usual for syphilis, gave the best results.

Oksala (*Acta ophth.* **33**:309, 1955) examined 35 patients with syphilitic interstitial keratitis at least one year after the termination of the active stage of the disease. Ten had been given an average dose of 6 million units of procaine penicillin. Fourteen had been given penicillin (average, 9 million units) associated

with malaria (average, 10 chills). In addition to this combined treatment, cortisone was administered topically to the remaining 11 patients. He summarizes his observations as follows: There is as yet no specific remedy for syphilitic interstitial keratitis. Penicillin has no effect on the course of the disease. Fever therapy reduces the subjective and objective symptoms of the disease, as it does in other intraocular inflammations, and is, therefore, of use in the active stage of the disease. Oksala believes that it is premature to evaluate fully the usefulness of corticotropin and cortisone. His experience indicates that, although a rapid improvement is often seen through administration of hormones, the improvement is not very lasting. The experiences of Vannas (in discussion on Oksala) with topically administered cortisone at the Helsinki University clinic indicate rather promising results in interstitial keratitis, but Vannas warns that maintenance doses should not be discontinued too early. On the basis of five patients treated with cortisone given locally plus penicillin and fever therapy, Segal and Zylo-Filipowicz (*Klin. Oczna* **24**:133, 1954) conclude that cortisone has only a symptomatic benefit. The signs and symptoms returned when administration of cortisone was discontinued.

## PENICILLIN FOR SALPINGITIS

To the Editor:—*What is the proper dosage of penicillin for each of the following conditions, assuming one is dealing with penicillin-sensitive bacteria: (1) acute streptococcic salpingitis, (2) chronic pelvic inflammatory disease due to streptococcic salpingitis, and (3) acute gonorrheal salpingitis?*

*Paul Russell, M.D., Inglewood, Calif.*

Answer.—In using penicillin for the treatment of acute streptococcic salpingitis in an adult female, a single injection of 900,000 units of benzathine penicillin would probably be adequate. When faced with chronic pelvic inflammatory disease due to a streptococcic infection, the dose of benzathine penicillin should be increased to 1,200,000 units given intramuscularly in one injection. A single dose of 600,000 units of benzathine penicillin should prove effective in the treatment of acute gonorrheal salpingitis.

## ENLARGED BREASTS AT AGE FOUR

To the Editor:—*A girl 4 years old was born prematurely with slightly enlarged breasts. She has always been healthy, but her breasts have remained slightly enlarged. She pulls on her breasts from time to time and sits on the floor watching television and palpates or massages her vulva and at times does this when bathing. What can be done about this? Would hormones do any good, particularly stilbestrol?*

*M. D., Texas.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—The habit described in regard to massaging the vulva is not rare in young children. In infants it is quite common. Among the latter itching may be caused by pinworms, which could also be responsible in older girls. A vulvovaginitis sometimes accounts for the habit. If there is no endocrinological disturbance it is doubtful that hormones would be of value. Benzedrine has been recommended for trial (Bakwin, H.: *J. Pediat.* **40**:675 [May] 1952) to lessen sex tension. This drug should be administered in the morning if the habit occurs in the daytime, but if the habit is at night a mild sedative should be given at bedtime. It would seem that the clothing could be so arranged as to prevent the child's hands from contacting the breasts. Punishment of any kind is considered ill advised. Eventually the child should abandon its bad habits. As a rule there is no serious injury to the general health in such cases. It is not likely that stilbestrol would be of value.

Answer.—Breast engorgement with areolar and glandular development is physiological in the normal newborn infant but is not seen in the premature infant and cannot be explained without more information. If this child is normal in all other respects, the present prominence of the breasts must be due either to isolated precocious breast development or more likely to the presence of normal adipose tissue. Palpable glandular tissue is found in precocious breast development. No treatment is indicated. Hormone therapy should not be given. In either case the physical appearance is unalterable unless general obesity exists. It must be accepted as such until it becomes desirable at an older age. A minimal amount of masturbation is normal at this age. If the amount of masturbation is really excessive and not parental exaggeration of the normal, some aberration in the normal parent-child relationship must exist. The problem of masturbation should be resolved with proper counseling. The parents should be reassured and advised to ignore the masturbation. The child should be provided with more activities to use her hands elsewhere. Any other disturbances in the parent-child relationship should be corrected as indicated.

## ADMINISTRATION OF THYROID EXTRACT

To the Editor:—*Many patients whose basal metabolic values are in the low-normal or moderately low range, perhaps −10 to −15 or −20, are given thyroid extract for a variety of reasons, such as chronic fatigue, menstrual irregularities, moderate hypotension, or obesity. If these values are not actually due to low thyroid function but to a general hypometabolism, does the prescribing of thyroid to euthyroid or mildly hypothyroid patients depress thyroid function in the same manner that prescribing cortisone for long periods may depress adrenal cortical function? After thyroid medication is discontinued would one expect to obtain a lower basal metabolic rate, protein-bound iodine level, or radioactive iodine uptake than before the thyroid was taken?*

*Benjamin Trachtman, M.D., Brooklyn, N. Y.*

Answer.—The administration of desiccated thyroid to euthyroid subjects does depress thyroid gland function, presumably by inhibition of pituitary secretion of thyrotropin. Oral doses of 1 or 2 grains (0.6 or 0.12 gm.) of desiccated thyroid to euthyroid patients usually do not affect the protein-bound iodine level or basal metabolic rate. However, when 3 grains (0.2 gm.) are administered to euthyroid patients for a month, there is an inconstant initial rise in basal metabolic rate and protein-bound iodine followed by a gradual return to pretreatment levels despite continued administration of thyroid. With larger doses the rise in protein-bound iodine level and basal metabolic rate occurs regularly and the gradual decline that occurs with continued administration does not reach pretreatment levels. As little as 1 grain of desiccated thyroid for one week will depress thyroid gland radioactive iodine ($I^{131}$) uptake in about one-third of euthyroid subjects. Ingestion of 2 grains daily will regularly depress $I^{131}$ uptake. When desiccated thyroid is omitted there is a rapid drop in the protein-bound iodine and basal metabolic rate to levels below initial values, and in some patients mild symptoms of hypothyroidism appear. The protein-bound iodine reaches its lowest level about one to four weeks after omission of thyroid and the basal metabolic rate a little later. Thereafter there is a gradual return to normal values. The $I^{131}$ uptake, depressed during thyroid administration, returns to normal in most cases within two weeks. Occasionally as long as 11 weeks may elapse before return to normal. A few instances have been reported in which the $I^{131}$ uptake rebounds almost to thyrotoxic levels before return to control values.

## PENETRATION OF INFRARED RAYS

To the Editor:—*Could an infrared ray light bulb gradually bake the muscles in the hips of a man 73 years old to where he cannot use them enough to even balance himself on crutches to walk alone? He had a bad case of sciatica, for which he used the heat lamp every night and almost all night through on his hips and baked them in the daytime one to three times per day. He also rubbed the hips with liniment. He got so much worse he had to go to the hospital. His hips appeared to be burned, as they were red and bluish spotted. Those muscles seem damaged, but whether they can be brought back to normal use or not I do not know.*

*A. T. Hutto, M.D., Pelion, S. C.*

Answer.—It is first assumed that the device used on this patient was an electrically powered bulb designed to deliver infrared rays for therapeutic purposes. Incandescent sources of infrared energy for therapy usually emit in wave lengths rang-

ing in the infrared from 7,600 to 15,000 Angstrom units. The actual depth of penetration of the infrared rays themselves ranges from 1 mm. to 1 cm. at the most. Although small amounts of radiation may penetrate to still greater depths, this penetration range represents limits in depth at which biological action may be expected if any is to occur. The actual penetration of biologically effective infrared rays themselves into the muscles and especially the deeper muscles is negligible. It is therefore doubted that the infrared rays themselves have caused the difficulties found in this patient. The heating of the deeper structures when infrared rays are applied is due to the carrying of the heat by way of an intact blood supply from the superficial tissues to the deeper structures. It is expected that the rather prolonged use of the infrared lamp mentioned by the patient together with counterirritant drugs has resulted not in the relief of pain but possibly in the increase of pain, which resulted in still further decreasing the subject's activity. The role then of prolonged inactivity, prolonged heating, prolonged use of counterirritants applied to the skin, or the basic pathology causing the signs and symptoms in the first place, together with the patient's age, will be extremely difficult to evaluate in determining which are the major factors in bringing about the patient's present condition.

## SURGERY OF THE PAROTID GLAND

To the Editor:—*In the dissection of tumors of the parotid gland, we depend somewhat on twitching of the facial muscles in identifying tissues as we approach the facial nerve trunk and its branches. In our anesthetics these days we use Anectine or other curare-like drugs as a muscle relaxant in addition to general anesthetic agents. What is the opinion of other surgeons and anesthesiologists on the effect of these curare-like drugs on this source of nerve identification to the surgeon in parotid surgery?*

*M.D., Pennsylvania.*

Answer.—Unquestionably the use of muscle relaxants will take away the safeguard referred to; namely, twitching of facial muscles when the facial nerve or its branches are disturbed by the surgeon. This consultant was not aware that observation of muscle twitches was a usual method for keeping out of trouble. Where such reliance is the custom, it seems essential that the surgeons avoid the use of muscle relaxants.

## CROUP, TONSILLITIS, AND LARYNGITIS

To the Editor:—*I frequently see infants and children having symptoms of croup, tonsillitis, or laryngitis. 1. Should antibiotic treatment be withheld until the clinical course and signs are definite enough to rule out diphtheria? Will antibiotics or symptomatic treatment alter clinical course and findings in such a way that diphtheritic etiology is obscured? 2. How dependable are throat swabs that are permitted to dry en route to the state laboratory? 3. If a membranous tonsillar exudate appears in an immunized child, is it advisable to wait to see if it spreads before instituting treatment? If an antibiotic is given when the exudate is first noticed, will the diphtheritic etiology be obscured?*

*M.D., Iowa.*

Answer.—In regard to the questions as to the procedure in treatment of infants and children with croup, tonsillitis, and laryngitis, no blanket statement can be given. Therapy depends on the clinical judgment of the physician and his examination of the individual patient. Answers to the individual questions follow: 1. Generally if the patient is ill antibiotic therapy should not be withheld to rule out diphtheria. Such therapy will not obscure diphtheria etiology. 2. Throat swabs permitted to dry cannot be considered dependable. Throat swabs should be put immediately on appropriate culture material and the cultures determined in four to six hours. 3. If a membranous tonsillitis appears in an immunized child, antibiotic therapy would be indicated rather than waiting for the membrane to spread. In such a case it would be safe to wait several hours for the result of the throat culture before instituting diphtheria antitoxin therapy if there was any doubt. Giving an antibiotic should not obscure the diphtheria etiology.

## HAZARD IN USING X-RAY EQUIPMENT IN WARDS

To the Editor:—*What is the danger of using x-ray equipment in the wards while an oxygen tent is in use and in an operating room for a hip-nailing procedure while drop ether is being used and while nitrous oxide and oxygen are being used? The portable x-ray machine is 20 years old and is questionably shockproof. Would there be danger if a new shockproof machine were used?*

*M.D., Pennsylvania.*

Answer.—Although the use of modern shockproof apparatus has considerably diminished the hazard of explosion and fire, it is still there; hence every consideration and precaution must be exercised. This applies to use both in the ward while an oxygen tent is in use and in the operating room while ether is being administered and/or nitrous oxide and oxygen are being used. Awareness of the danger and proper precaution such as temporarily removing the large supply of anesthesia from the room will greatly minimize the hazard, particularly if the room is adequately ventilated and the air movement is active. If the operator is extremely careful, using a liberal quantity of commonsense care and precaution, avoiding foolhardy chance-taking, the hazard becomes minimal with modern shockproof equipment. Reference is made to Bulletin 56, National Fire Protection Association, Boston, and "Planning Guide for Radiologic Installations" (Chicago, Year Book Publishers, 1953) for complete details pertinent to this matter.

## ACCIDENTS WITH ROTARY-TYPE LAWN MOWERS

To the Editor:—*The answer given to a query in* The Journal, *June 2, 1956, page 485, concerning injuries caused by rotary lawn mowers did not indicate with sufficient force the hazards attending the use of these machines. I recall that in the last few years there have been three serious injuries reported in local newspapers. In one instance, a child was struck in the precordial region by a piece of wire impelled by the rotating blades with sufficient force to penetrate her heart. She died of the injury. In another instance, a pair of pliers had been left in the grass, and, when they were struck by the rotating blade of such a mower, a bystander was severely injured. In another case, a stone or fragment of glass in the grass produced a head wound in a child. Mowers of this sort are capable of inflicting fatal wounds at distances many feet removed from the site of the operation of the tool. Users of these mowers ought to learn to clear the entire area of bystanders.*

*George Ehni, M.D.*
*1006 Hermann Professional Bldg.*
*Houston 25, Texas.*

## REMOVAL OF NEVUS

To the Editor:—*In reference to the query in* The Journal, *May 26, 1956, page 398, entitled "Removal of Nevus," I should like to make the following comment. Nevi can be easily differentiated from malignant melanomas by means of radioactive phosphorus and external counting of the radioactivity with a Geiger-Müller tube (Bauer and Steffen: J. A. M. A. 158:563-565 [June 18] 1955). The test should be done before a biopsy specimen is taken, since granulation tissue will give a false-positive test. In my experience, I have not encountered a false-negative test.*

*Franz K. Bauer, M.D.*
*Chief, Radioisotope Service*
*Veterans Administration*
*Los Angeles 25.*

## CIRCUMCISION IN THE FEMALE

To the Editor:—*In* The Journal *for Aug. 27, 1955, page 1576, was a query regarding circumcision of the female. Almost every African woman examined in the prenatal and gynecologic clinics at this mission has had the clitoris and labia minora excised previously. Traceable to the scarring that follows this mutilation is a high incidence of obstruction of birth at the outlet, intrauterine fetal death, ruptured uterus, vesicovaginal and rectovaginal fistulas, and perineal lacerations. These results condemn this widely practiced custom.*

*Charles G. White, M.D.*
*Ganta Methodist Mission*
*Ganta, Liberia, West Africa.*

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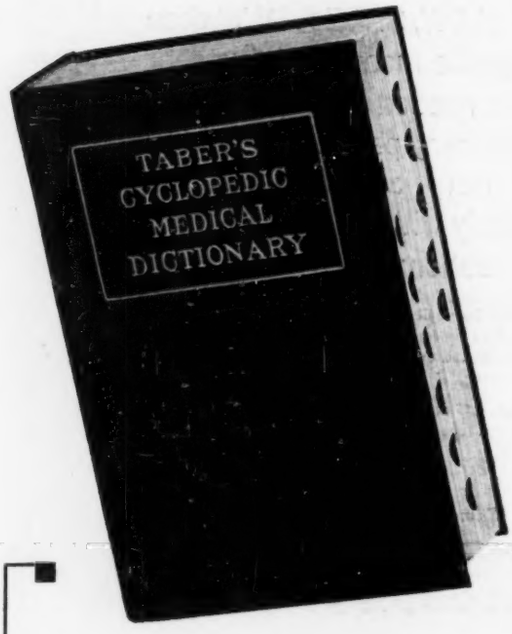


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## TRAINEESHIPS IN PUBLIC HEALTH

The Public Health Service is offering a total of approximately 250 traineeships for graduate or specialized public health training for professional public health personnel during the current fiscal year. Another 500 traineeships are being made available for graduate nurses preparing for supervision, teaching, or administration in public health. Both programs were authorized by the 84th Congress in the omnibus health bill recently signed into Public Law 911 by the President.

On public health traineeships, the PHS said the primary objective is "to bring new people into the field" and that the program is designed to "supplement rather than replace the training activities currently sponsored by the state and local governments." Preference will be given qualified individuals who have had not more than two years' experience in public health and less than a year of graduate or specialized public health training. The PHS also expressed a preference for men and women under 35 years of age and only under exceptional circumstances for those over 45. The traineeships, for which Congress appropriated 1 million dollars, will be awarded directly to individuals by the PHS or through grants to training institutions. Applicants for individual traineeships should apply to PHS regional offices or to the Chief, Division of General Health Services, Bureau of State Services, Public Health Service, Washington 25, D. C. After this year, applications should be in by April 1 of the academic year preceding the one for which the traineeship is wanted.

The graduate nurse traineeships, amounting to 2 million dollars this year, are being allocated directly to 54 nursing schools and schools of public health. An applicant, accordingly, will apply to the school of her choice. The program is being administered by the Division of Nursing Resources of the Public Health Service, in Washington.

## OTHER HEALTH MEASURES

A health research facilities branch has been established in the National Institutes of Health, and work is going forward on regulations to carry out the 90-million-dollar program of construction grants for research laboratories. A 12-man National Advisory Council on Health Research Facilities will be named by HEW Secretary Folsom, and its first job will be the approval of the regulations. The PHS surgeon general will award a grant only after it has been approved by the council.

With the enactment of Public Law 941, for the establishment of the National Library of Medicine, a panel of names for the board of regents was being drawn up for consideration by the President. He is to appoint 10 regents, and 7 others are government officials. The board's first major assignment is expected to be the selection of a site for the library.

## SALK VACCINE

A limited quota of 1 million cubic centimeters of Salk poliomyelitis vaccine is being made available for export for the first time. This represents approximately 2.5% of U. S. production for May, June, and July, according to Secretary of Commerce Sinclair Weeks. In his announcement of the action, Mr. Weeks said, "American children are given full opportunity to be vaccinated. Now that supply is approaching domestic requirements, an allocation of vaccine is being made for commercial export to friendly foreign countries urgently in need of the vaccine. During the period when the supply was short, only small amounts of the vaccine were licensed for export for special purposes, primarily in the research field."

It is anticipated that the export quota will be greatly oversubscribed in view of the keen interest expressed in many countries for vaccine from the United States. Therefore, in order to help insure an equitable distribution of the quota, criteria have been established by the department giving priority to countries having a known high incidence of poliomyelitis or those suffering from severe current epidemics. Additionally, consideration will be given to the adequacy of programs for effective utilization of the vaccine. In general, licenses will be issued only for applications endorsed by the ministry of public health of the countries concerned. The Bureau of Foreign Commerce will announce in a forthcoming bulletin the detailed requirements in connection with the filing of applications for export of vaccine under this quota.

## SURVIVAL PLAN

The Federal Civil Defense Administration has announced a new "national plan for survival" in the event of an enemy attack. The plan is outlined in a publication that replaces a 1950 study of the National Security Resources Board that has become outdated since the development of the hydrogen bomb. The new plan is divided into two broad phases of civil defense activity: preparations that must be made during the preattack period and actions that must be carried out during the emergency period immediately before and after an enemy attack.

*(Continued on next page)*

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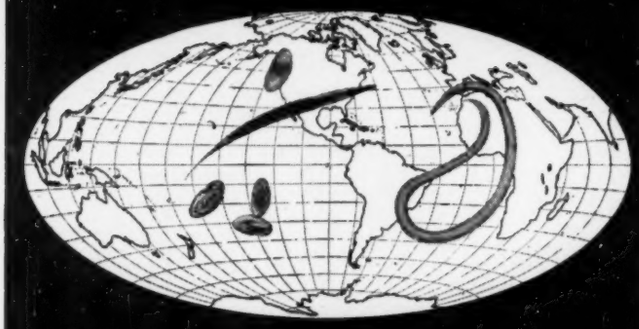

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## *Washington News—Continued*

The FCDA points out that the document is not an operational plan but "provides a broad base upon which operational plans—national, regional, state and local—can be developed." Directed primarily toward state and local civil defense directors and their staffs, the plan also is designed to serve as a guide for federal agencies, national organizations, and others cooperating in the civil defense program. It is not intended as a presentation of future plans, but reflects current thinking only, the agency stresses. Revision would be essential if a potential aggressor developed the ability to attack with intercontinental ballistic missiles, produced atomic-powered planes, or developed new techniques for chemical or biological warfare.

The national plan also outlines the FCDA's responsibility for close cooperation with state and local agencies through its seven regional offices and the FCDA relationship with other federal agencies that have been delegated definite responsibilities for action in civil defense. Copies of the plan are available for 55 cents through the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

### SPECIALISTS IN ARMY

The Army's semiannual survey of its specialists shows internal medicine is the most popular, with surgery a close second. Of the 681 Army medical officers on active duty (regular and reserve) who hold specialty certification, 17% are in internal medicine and 15% in surgery. Among the remaining 68%, a total of 23 specialties and subspecialties is represented. The Army notes that the total of medical specialists now in uniform is slightly lower than during the Korean war period, when large numbers of reserve officers were recalled to active duty. At one point the total was over 800. However, the Army says that the present high total of 681 medical officer specialists "reflects the constant growth of American board diplomate census" since the Army started its graduate professional training program in 1947. Of the 102 Army medical officers listed as diplomates in internal medicine, 11 also have certification in a subspecialty in their field.

### REHABILITATION GRANTS

To help support state vocational rehabilitation programs, the U. S. Office of Vocational Rehabilitation has allocated to states 35 million dollars appropriated by Congress. The total is $3,500,000 more than the program had last year. Of the total, $33,500,000 is designated for basic support of state programs to help disabled persons overcome their handicaps and obtain employment and $1,500,000 is earmarked for use in projects designed to improve and extend rehabilitation services. All federal funds must be matched by the states, but states are permitted to make grants to other public or private nonprofit organizations to set up, enlarge, or improve rehabilitation facilities and sheltered workshops. In addition to the two matching fund

grants, 2 million dollars is available for special project grants in research and demonstrations and $2,950,000 for teaching grants and traineeships for professional rehabilitation workers.

## PERSONNEL

Dr. Peter J. Farago has been appointed as deputy medical director of the Food and Drug Administration. Dr. Farago comes to the FDA from the Abbott Laboratories, North Chicago, where he has been a member of the medical department doing investigative work on new drugs for the past three years. . . . Brig. Gen. Otis O. Benson Jr., who has been with the Air Force surgeon general's office for three years, has been named commandant of the School of Aviation Medicine at Randolph Field, Texas. . . . The Federal Civil Defense Administration has announced the appointment of Miss Catherine M. Sullivan, a commissioned nurse officer of the U. S. Public Health Service, as assistant chief nurse in the FCDA health office at the agency's national headquarters, Battle Creek, Mich. Miss Sullivan will work under the direction of the chief nurse of the health office.

## MISCELLANY

The National Institutes of Health, Bethesda, Md., is administering a senior research fellowship program designed to attract and hold able investigators in the preclinical sciences. During the first year, the program will provide for a total of 40 to 50 awards to the nation's medical schools, dental schools, and schools of public health. Along these same lines, the PHS National Institute of Neurological Diseases and Blindness has announced that funds are being made available to medical schools to strengthen existing clinical programs in advanced training in the neurological diseases. The purpose is to stimulate the interest of more young physicians and scientists in careers as teachers and investigators. Training grants also are available to basic science departments to expand postdoctoral training programs in the neurological sciences. . . . The expanding horizons of military medicine will be the theme of the annual meeting of the Association of Military Surgeons of the United States, to be held in Washington, D. C., on Nov. 12, 13, and 14. The meeting will stress the growing responsibilities of medicine and its associated discipline in the federal medical services. . . . Nineteen research and demonstration projects for which the Office of Vocational Rehabilitation has allocated grants totaling $540,923 have been announced. They include "halfway" house to effect vocational rehabilitation of discharged mental hospital patients, a project to rehabilitate blind farmers and their farms simultaneously, and research into the use of physically handicapped persons in automation. In announcing the grants, Miss Mary E. Switzer, director of OVR, said that all these programs hold promise of making substantial contributions to the solution of vocational rehabilitation problems. All the projects have been approved by the 12-member National Advisory Council on Vocational Rehabilitation.


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Bumbalo, T. S., Gustina, F. J., and Oleksiak, R. E.: J. Pediat. 44:386, 1954.

White, R. H. R., and Standen, O. D.: Brit. M. J. 2:755, 1953.

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Brown, H. W.: J. Pediat. 45:419, 1954.

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## NATIONAL ORGANIZATIONS OF MEDICAL INTEREST

| SOCIETY | PRESIDENT | SECRETARY | MEETING |
|---|---|---|---|
| American | | | |
| Public Health Association | Ira V. Hiscock, New Haven, Conn. | R. M. Atwater, 1790 Broadway, New York 19 | Atlantic City, N. J., Nov. 12-16 |
| Radium Society | N. A. McCormick, Windsor, Ont., Canada | Theodore R. Miller, 139 East 36th St., New York 16 | Quebec City, Can., May 30-June 1 |
| Rheumatism Assn. | William D. Robinson, Ann Arbor, Mich. | Edward F. Hartung, 580 Park Ave., New York 21 | Toronto, Can., June 23-28 |
| Roentgen Ray Society | Paul C. Hodges, Chicago | Barton R. Young, Germantown Hosp., Philadelphia 44 | Los Angeles, Sept. 25-28 |
| School Health Assn. | I. P. Barrett, Fort Worth, Tex. | A. O. DeWeese, 515 E. Main St., Kent, Ohio | Atlantic City, N. J., Nov. 12-18 |
| Society for Clinical Investigation | A. McGehee Harvey, Baltimore 5 | J. D. Meyers, U. of Pittsburgh, Sch. of Med., Pittsburgh 12 | |
| Society for Experimental Pathology | Frank W. Hartman, Detroit | Cyrus C. Erickson, 858 Madison Ave., Memphis 3, Tenn. | Chicago, April 15-19 |
| Society for Pharm. & Ex. Ther. | Harry Beckman, Milwaukee 32 | Harold Hodge, Univ. of Rochester, Rochester 20, N. Y. | Louisville, Ky., Oct. 22-25 |
| Society for the Study of Sterility | W. T. Pommerenke, Rochester, N. Y. | H. H. Thomas, 920 S. 19th St., Birmingham, Ala. | New York, May 31-June 2 |
| Society of Anesthesiologists | Scott M. Smith, Salt Lake City 11 | J. E. Remlinger, Jr., 188 W. Randolph St., Chicago 1 | Kansas City, Mo., Oct. 8-12 |
| Society of Biological Chemists | H. E. Carter, Urbana, Ill. | Philip Handler, Duke University, Durham, N. C. | Chicago, April 15 |
| Society of Clinical Pathologists | Emma S. Moss, New Orleans 12 | C. G. Culbertson, 1040 W. Michigan St., Indianapolis 6 | Chicago, Oct. 7-12 |
| Society of Maxillofacial Surgeons | Douglas B. Parker, New Orleans | John A. Drummond, 1414 Drummond St., Montreal 25, Can. | Minneapolis, May 12-15 |
| Society of Tropical Medicine & Hygiene | Asa C. Chandler, Houston 1, Texas | John E. Larsh, Jr., Univ. of N. Car., Chapel Hill, N. C. | New Orleans, Oct. 31-Nov. 3 |
| Surgical Assn. | Loyal Davis, Chicago | R. Kennedy Gilchrist, 59 E. Madison St., Chicago 3 | Chicago, May 8-10 |
| Therapeutic Society | Gerald H. Pratt, New York | O. B. Hunter, Jr., 915 19th St., N.W., Washington, D. C. | New York, May 30-June 2 |
| Trudeau Society | Paul C. Samson, Lafayette, Calif. | William G. Childress, 1790 Broadway, New York 19 | Kansas City, Mo., May 6-9 |
| Urological Assn. | George C. Prather, Brookline 46, Mass. | Samuel L. Raines, 188 S. Bellevue Blvd., Memphis, Tenn. | Pittsburgh, May 6-9 |
| Venereal Disease Assn. | Ivan E. Martin, Modesto, Calif. | S. R. Taggart, 300 Indiana Ave. N.W., Wash. 1, D. C. | |
| Veterinary Medical Assn. | Floyd Gross, Fort Collins, Colo. | J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 5 | San Antonio, Tex., Oct. 15-18 |
| Assn. for Research in Nervous & Ment. Dis. | Harry Solomon, Boston | Rollo J. Masselink, 700 W. 168th St., New York 32 | New York, Dec. 7-8 |
| Assn. for Research in Opthalmology | William B. Clark, New Orleans | Lorand V. Johnson, 10515 Carnegie Ave., Cleveland 6 | |
| Assn. of American Medical Colleges | Robert A. Moore, Pittsburgh | Dean F. Smiley, 185 N. Wabash Ave., Chicago | Colorado Springs, Colo., Nov. 12-14 |
| Assn. of American Physicians | C. Phillip Miller, Chicago 37 | P. B. Beeson, Yale U. Sch. of Med., New Haven 11, Conn. | Atlantic City, N. J., May 7-8 |
| Assn. of Life Ins. Med. Dir. of America | Ralph R. Simmons, Des Moines, Iowa | Henry B. Kirkland, P. O. Box 594, Newark 1, N. J. | New Orleans, Oct. 23-25 |
| Assn. of Medical Illustrators | Mr. Leon Schlossberg, Baltimore 5 | Miss Rose M. Reynolds, 42nd and Dewey Ave., Omaha 5 | Iowa City, Oct. 5-7 |
| Assn. of Military Surgeons of U. S. | W. Dana, U.S.N., Washington 25, D. C. | R. E. Bitner, 1726 I St., N.W., Washington 6, D. C. | Washington, D. C., Nov. 12-14 |
| Assn. of State & Territorial Health Officers | Daniel Bergsma, Trenton, N. J. | Franklin D. Yoder, State Board of Health, Cheyenne, Wyo. | Washington, D. C., 1956 |
| Biological Photographic Assn. | Mr. H. Lou Gibson, Rochester 4, N. Y. | Miss J. Waters, Box 1668, Grand Central P. O., N. Y. 17 | Rochester, N. Y., Aug. 27-31 |
| Central Assn. of Ob. & Gyn. | Harold L. Gainey, Kansas City, Mo. | Edwin J. DeCosta, 104 S. Michigan Ave., Chicago 3 | New Orleans, Oct. 4-6 |
| Central Neuropsychiatric Assn. | Francis J. Gerty, Chicago | Hamilton Ford, 112 North Blvd., Galveston, Texas | Omaha, Neb., Oct., 1956 |
| Central Society for Clinical Research | Randall Sprague, Rochester, Minn. | Robert H. Ebert, 950 E. 59th St., Chicago 37 | Chicago, Nov. 9-10 |
| Central Surgical Assn. | Robert M. Zollinger, Columbus 10, Ohio | Charles D. Branch, 102 North St., Peoria, Ill. | Chicago, Feb. 21-23 |
| Clinical Orthopaedic Society | I. S. McReynolds, Houston, Texas | Marcus J. Stewart, 869 Madison Ave., Memphis, Tenn. | Cleveland, Oct. 5-6 |
| College of American Pathologists | W. A. D. Anderson, Miami, Fla. | A. H. Dearing, Prudential Plaza, Suite 2115, Chicago 1 | Chicago, Oct. 6-13 |
| Gerontological Society | William B. Kountz, St. Louis 9 | Nathan W. Shock, Baltimore City Hospitals, Baltimore 24 | Chicago, Nov. 8-10 |
| Industrial Medical Association | E. S. Jones, Hammond, Ind. | H. Glen Gardiner, Inland Steel Co., East Chicago, Ind. | St. Louis, April 22-26 |
| Interstate Postgrad. Med. Assn. of N. A. | Alton Ochsner, New Orleans | Erwin R. Schmidt, 1300 University Ave., Madison 6, Wis. | Cleveland, Oct. 22-26 |
| Medical Library Assn. | Miss Bertha B. Hallam, Portland 1, Ore. | Mrs. H. T. Perkins, 333 Cedar St., New Haven 11, Conn. | New York, May 6-10 |
| National Medical Assn. | A. C. Terrence, Opelousas, La. | John T. Givens, 1108 Church St., Norfolk 10, Va. | |
| National Multiple Sclerosis Society | Mr. Ralph C. Glock, New York | Mr. Donald Vail, 270 Park Ave., New York 17 | New York, March, 1957 |
| National Proctologic Assn. | R. A. Winters, Chicago | George E. Mueller, 30 E. Madison St., Chicago 2 | Chicago, Oct. 18-20 |
| National Tuberculosis Assn. | Howard W. Bosworth, Los Angeles 26 | Mrs. Morrell DeReign, 1790 Broadway, New York 19 | Kansas City, Mo., May 5-10 |
| Neurosurgical Society of America | Joshua A. Speigel, Chicago 2 | Frank P. Smith, 260 Crittenden Blvd., Rochester 20, N. Y. | Palm Springs, Calif., Jan. 16-19 |
| Radiological Society of North America | Clarence E. Hufford, Toledo, Ohio | D. S. Childs, 713 E. Genesee St., Syracuse 2, N. Y. | Chicago, Dec. 2-7 |
| Society for Investigative Dermatology | Maximilian E. Obermayer, Los Angeles 5 | Herman Beerman, 255 S. 17th St., Philadelphia 3 | New York, June 1-2 |
| Society for Pediatric Research | William M. Wallace, Cleveland 6 | Sydney S. Gellis, 330 Brookline Ave., Boston 15 | Carmel, Calif., June 16-21 |
| Society for Vascular Surgery | Arthur H. Blakemore, New York 32 | Henry Swan, 4200 East 9th Ave., Denver 20 | New York, June 2 |
| Society of American Bacteriologists | C. A. Stuart, Providence, R. I. | J. H. Bailey, Sterling-Winthrop Res. Inst. Rensselaer, N. Y. | Detroit, April 28-May 2 |
| Society of Biological Psychiatry | Margaret A. Kennard, Vancouver, B. C. | George N. Thompson, 2010 Wilshire Blvd., Los Angeles 57 | Atlantic City, N. J., June 15-16 |
| Society of Clinical Surgery | Richard K. Gilchrist, Jr., Chicago | F. F. Albritten, Jr., Univ. of Kans., Kansas City, Kan. | |
| Society of Neurological Surgeons | Edgar F. Fincher, Emory University, Ga. | Bronson S. Ray, 525 E. 68th St., New York 21 | |
| Society of University Surgeons | Harold A. Zintel, Philadelphia 4 | James Hardy, Hospital of the U. of Miss., Jackson, Miss. | Columbus, Ohio, Feb., 1957 |
| Southeastern Surgical Congress | J. O. Morgan, Gadsden, Ala. | B. T. Beasley, 45 Edgewood Ave. S.E., Atlanta 3, Ga. | St. Petersburg, Fla., April 1-4 |
| Southern Medical Assn. | W. Raymond McKenzie, Baltimore 1 | Mr. V. O. Foster, Empire Bldg., Birmingham 3, Ala. | Washington, D. C., Nov. 12-15 |
| Southern Surgical Assn. | Deryl Hart, Durham, N. C. | George G. Finney, 2947 St. Paul St., Baltimore 18 | Boca Raton, Fla., Dec. 4-6 |
| Southwestern Medical Assn. | John Dettweiler, Albuquerque, N. Mex. | Russell L. Deter, 1501 Arizona St., El Paso, Tex. | Albuquerque, N. Mex., 1956 |
| Southwestern Surgical Congress | John V. Goode, Dallas, Texas | C. M. O'Leary, 207 Plaza Court Bldg., Oklahoma City | Wichita, Kans., April 15-17 |
| Student American Medical Assn. | Mr. Kent Guild, Chicago | Mr. Russell F. Staudacher, 510 N. Dearborn St., Chicago 10 | Philadelphia, May 3-5 |
| The Endocrine Society | Warren O. Nelson, New York | H. H. Turner, 1200 N. Walker St., Oklahoma City | |
| U. S. Section, Internat'l Coll. of Surgeons | Arnold S. Jackson, Madison, Wis. | Karl Meyer, 1516 Lake Shore Dr., Chicago | Chicago, Sept. 9-13 |
| Western Industrial Medical Assn. | Packard Thurber Jr., Los Angeles 14 | Edward J. Zaik, 740 S. Olive St., Los Angeles 14 | |
| Western Orthopedic Assn. | James Lytton-Smith, Phoenix, Ariz. | John Ricker, 926 E. McDowell Rd., Phoenix | Phoenix, Ariz., Oct. 30-Nov. 3 |
| Western Society of Electro-Encephalography | Arthur A. Ward Jr., Seattle | S. N. Berens, 902 Boren Ave., Seattle | |
| Western Surgical Assn. | Charles G. Johnston, Detroit | John T. Reynolds, 612 N. Michigan Blvd., Chicago 11 | Cincinnati, Nov. 29-Dec. 1 |
| Woman's Auxiliary to the Am. Med. Assn. | Mrs. Robert Flanders, Manchester, N. H. | Miss Margaret Wolfe, 535 N. Dearborn St., Chicago 10 | New York, June 3-7 |
| World Medical Assn. | Karl Niederberger, Vienna 1, Austria | Louis H. Bauer, 10 Columbus Circle, New York 19 | Havana, Cuba, Oct. 9-15 |


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*Smith, L. W.: The Present Status of Topical Chlorophyll Therapy, New York J. Med. 55:2041 (July 15) 1955.

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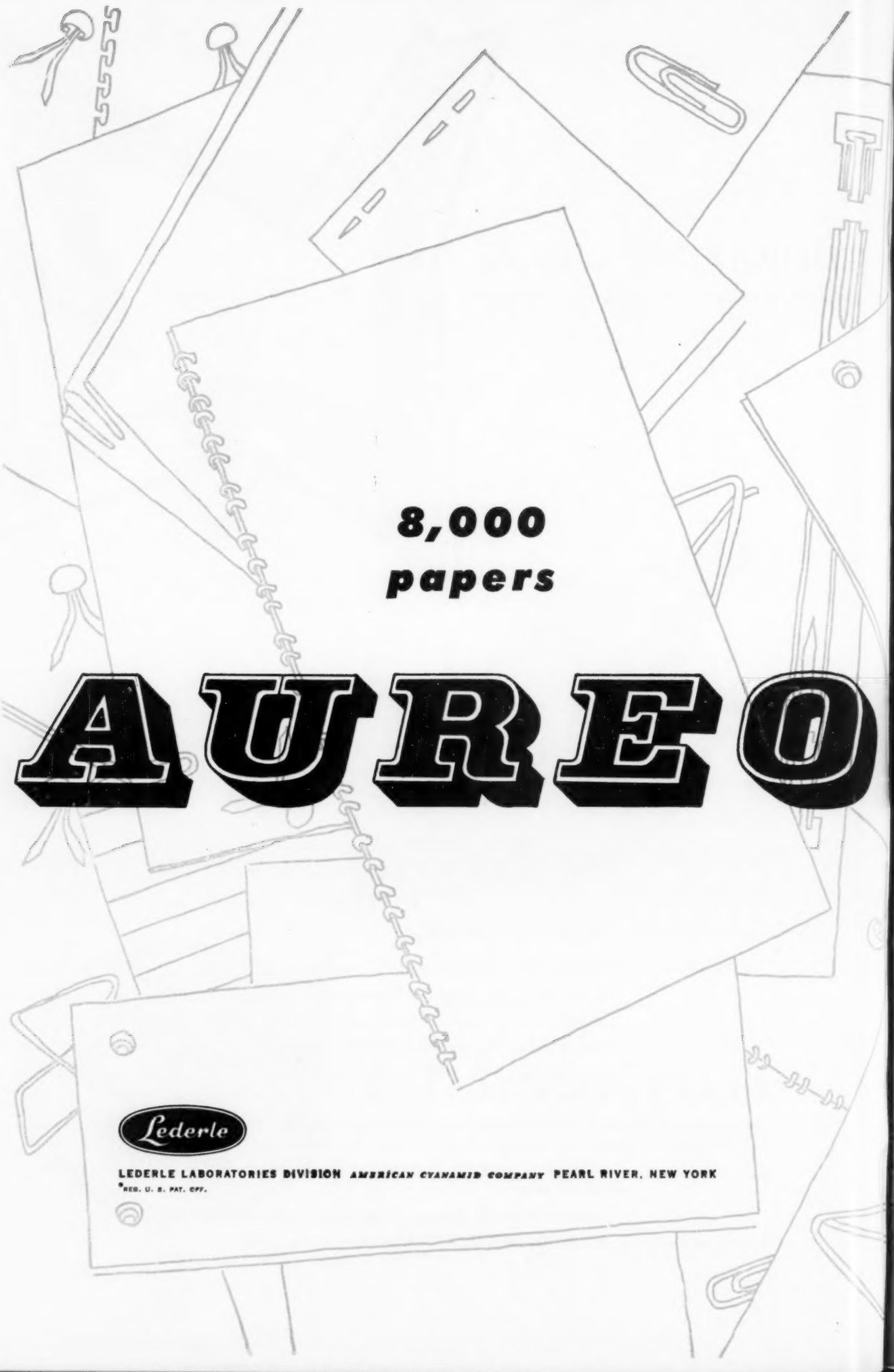
1. Karp, M., et al.: Am. J. Obst. & Gynec. 69:780 (April) 1955.

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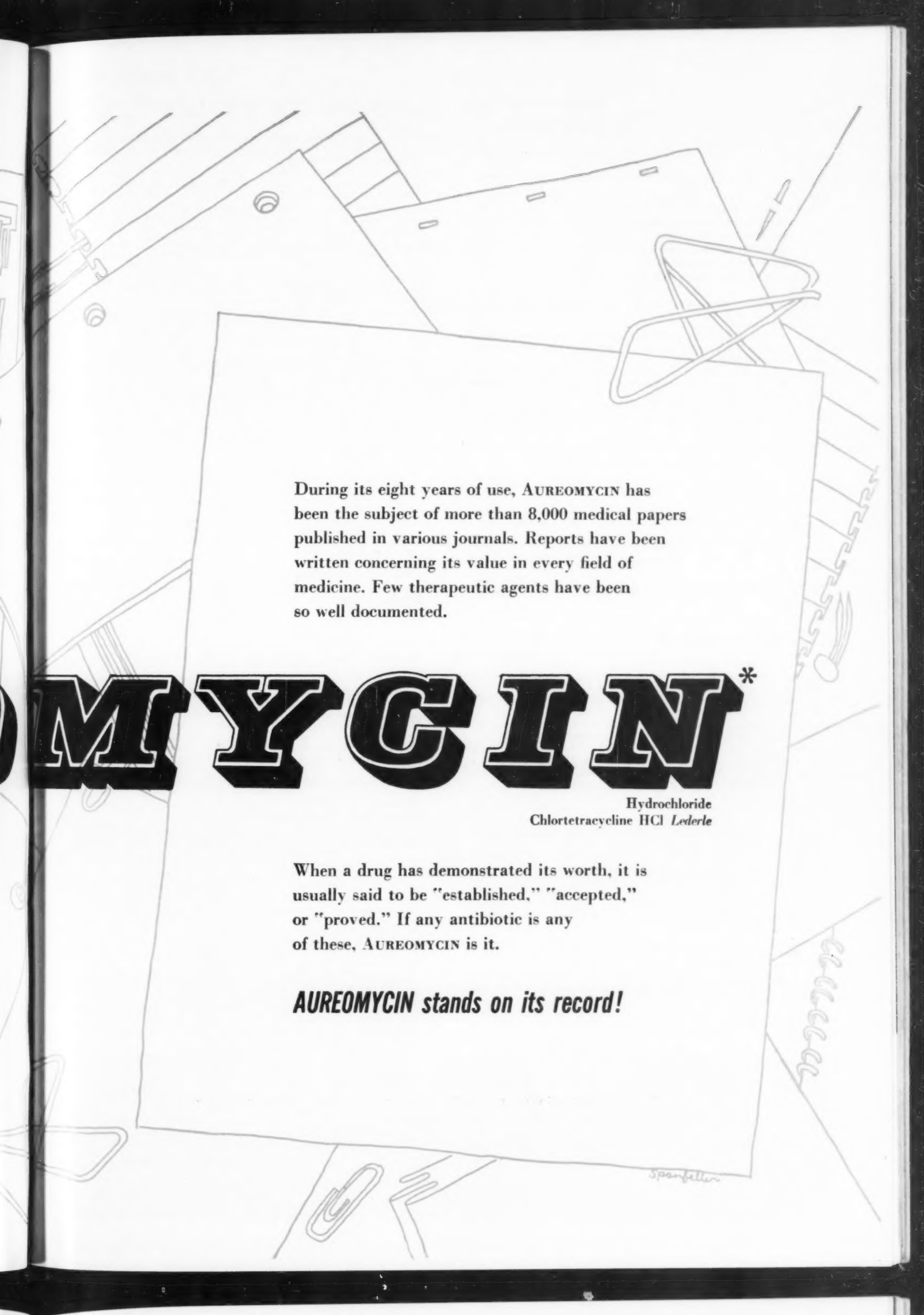

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# MEETINGS

**AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.**

**1956 Clinical Meeting, Seattle, Nov. 27-30.**

**1957 Annual Meeting, New York, June 3-7.**

**1957 Clinical Meeting, Philadelphia, Dec. 3-6.**

**1958 Annual Meeting, San Francisco, June 23-27.**

**1958 Clinical Meeting, Minneapolis, Dec. 2-5.**

**1959 Annual Meeting, Atlantic City, June 8-12.**

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AMERICAN MEDICAL ASSOCIATION PUBLIC RELATIONS INSTITUTE, Drake Hotel, Chicago, Aug. 29-30. Mr. Leo E. Brown, 535 N. Dearborn St., Chicago 10, Director.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY, Palmer House, Chicago, Oct. 14-19. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Secretary.

AMERICAN ACADEMY OF PEDIATRICS, Palmer House, Chicago, Oct. 5-10. Dr. E. H. Christopherson, 1801 Hinman Ave., Evanston, Ill., Executive Secretary.

AMERICAN ASSOCIATION OF BLOOD BANKS, Somerset Hotel, Boston, Sept. 3-5. Miss Marjorie Saunders, 3707 Gaston Ave., Dallas 10, Tex., Secretary.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS, The Homestead, Hot Springs, Va., Sept. 6-8. Dr. Frank R. Lock, Bowman Gray School of Medicine, Winston-Salem, N. C., Secretary.

AMERICAN ASSOCIATION FOR THE SURGERY OF TRAUMA, The Biltmore, Santa Barbara, Calif., Oct. 4-6. Dr. James K. Stack, 700 N. Michigan Ave., Chicago 11, Secretary.

AMERICAN BRANCH, INTERNATIONAL SOCIETY OF SURGERY, Fairmont Hotel, San Francisco, Oct. 9. Dr. Walter G. Maddock, 250 East Superior St., Chicago 11, Secretary.

AMERICAN COLLEGE OF CLINIC ADMINISTRATORS, Eden Roc Hotel, Miami Beach, Fla., Sept. 16-19. Miss Eva M. Rule, 106 North Silver St., Olney, Ill., Secretary.

AMERICAN COLLEGE OF GASTROENTEROLOGY, Hotel Roosevelt, New York, Oct. 14. Mr. Daniel Weiss, 33 West 60th St., New York 23, Executive Secretary.

AMERICAN COLLEGE OF SURGEONS, Fairmont Hotel, San Francisco, Oct. 8-12. Dr. Michael L. Mason, 40 East Erie St., Chicago, Secretary.

AMERICAN CONGRESS OF PHYSICAL MEDICINE AND REHABILITATION, Atlantic City, N. J., Sept. 10-14. Dr. Walter J. Zeiter, 30 N. Michigan Ave., Chicago 2, Executive Director.

AMERICAN DENTAL ASSOCIATION, Atlantic City, Oct. 1-4. Dr. Harold Hillenbrand, 222 East Superior St., Chicago 11, General Secretary.

AMERICAN HOSPITAL ASSOCIATION, Palmer House, Chicago, Sept. 17-20. Dr. Edwin L. Crosby, 18 E. Division St., Chicago 10, Director.

AMERICAN MEDICAL WRITERS' ASSOCIATION, Hotel Morrison, Chicago, Sept. 28-29. Dr. Harold Swanberg, P. O. Drawer 110, Quincy, Ill., Secretary.

AMERICAN RHINOLOGIC SOCIETY, Illinois Masonic Hospital and Palmer House, Oct. 9-13. Mrs. Mabel Campbell, 834 Wellington Ave., Chicago 14, Corresponding Secretary.

AMERICAN ROENTGEN RAY SOCIETY, Hotel Statler, Los Angeles, Sept. 25-28. Dr. Barton R. Young, Germantown Hospital, Philalelphia 44, Secretary.

AMERICAN SOCIETY OF ANESTHESIOLOGISTS, Municipal Auditorium, Kansas City, Mo., Oct. 8-12. Mr. John H. Hunt, 188 West Randolph St., Chicago 1, Executive Secretary.

AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS, Drake Hotel, Chicago, Oct. 7-12. Dr. Clyde G. Culbertson, 1040-1232 West Michigan St., Indianapolis, Secretary.

AMERICAN VETERINARY MEDICAL ASSOCIATION, Plaza Hotel, San Antonio, Texas, Oct. 15-18. Dr. J. G. Hardenbergh, 600 South Michigan Blvd., Chicago 5, Executive Secretary.

ASSOCIATION OF MEDICAL ILLUSTRATORS, Iowa City, Oct. 5-7. Miss Rose M. Reynolds, University of Nebraska College of Medicine, Omaha 5, Corresponding Secretary.

BIOLOGICAL PHOTOGRAPHIC ASSOCIATION, Powers Hotel, Rochester, N. Y., Aug. 27-31. Miss Jane H. Waters, Box 1668, Grand Central P. O., New York 17, Executive Secretary.

CENTRAL ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS, Roosevelt Hotel, New Orleans, Oct. 4-6. Dr. Edwin J. DeCosta, Suite 615, 104 South Michigan Ave., Chicago 3, Secretary.

CLINICAL ORTHOPAEDIC SOCIETY, Cleveland, Oct. 5-6. Dr. Marcus J. Stewart, 869 Madison Ave., Memphis, Tenn., Executive Secretary.

COLLEGE OF AMERICAN PATHOLOGISTS, Drake Hotel, Chicago, Oct. 6-13. Dr. A. H. Dearing, Suite 2115, Prudential Plaza, 130 East Randolph St., Chicago, Executive Secretary.

COLORADO STATE MEDICAL SOCIETY, Stanley Hotel, Estes Park, Sept. 5-8. Mr. Harvey T. Sethman, 835 Republic Bldg., Denver 2, Executive Secretary.

GULF COAST CLINICAL SOCIETY, Admiral Semmes Hotel, Mobile, Ala., Oct. 18-19. Dr. Theodore F. Middleton, 1302 Government St., Mobile, Ala., Secretary.

INDIANA STATE MEDICAL ASSOCIATION, Murat Temple, Indianapolis, Oct. 16-18. Mr. James A. Waggener, 23 East Ohio St., Indianapolis 4, Executive Secretary.

INSTITUTE OF PSYCHIATRIC TREATMENT, Boston State Hospital, Boston, Sept. 27-29. Dr. Leo Alexander and Dr. Robert Arnot, 433 Marlborough St., Boston 15, Co-Chairmen.

KANSAS CITY SOUTHWEST CLINICAL SOCIETY, Fall Clinical Conference, Municipal Auditorium, Kansas City, Mo., Sept. 24-27. Dr. Lee H. Leger, 3036 Gillham Road, Kansas City 8, Mo., Director of Clinics.

KENTUCKY STATE MEDICAL ASSOCIATION, Brown Hotel and Columbia Auditorium, Louisville, Sept. 18-20. Mr. J. P. Sanford, 620 S. Third St., Louisville 2, Executive Secretary.

MICHIGAN STATE MEDICAL SOCIETY, Sheraton-Cadillac Hotel, Detroit, Sept. 26-28. Dr. L. Fernald Foster, 606 Townsend St., Lansing 5, Secretary.

MID-CONTINENT PSYCHIATRIC ASSOCIATION, Velda Rose Motel, Hot Springs, Ark., Sept. 21-23. Dr. William F. Roth Jr., University of Kansas Medical Center, Kansas City 12, Kans., Secretary.

MISSISSIPPI VALLEY MEDICAL SOCIETY, Hotel Morrison, Chicago, Sept. 26-28. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

MONTANA MEDICAL ASSOCIATION, Rainbow Hotel, Great Falls, Sept. 13-15. Mr. L. R. Hegland, P. O. Box 1692, Billings, Executive Secretary.

NATIONAL PROCTOLOGIC ASSOCIATION, Maryland Hotel, Chicago, Oct. 18-20. Dr. George E. Mueller, 59 East Madison St., Chicago 2, Executive Secretary.

NEW HAMPSHIRE MEDICAL SOCIETY, Wentworth-by-the-Sea, Newcastle, Sept. 28-30. Dr. Warren H. Butterfield, 18 School St., Concord, Secretary.

OREGON STATE MEDICAL SOCIETY, Portland, Oct. 16-20. Dr. Richard R. Carter, 1020 S. W. Taylor St., Portland 5, Secretary.

REGIONAL MEETINGS:

AMERICAN COLLEGE OF PHYSICIANS:

New England, Burlington, Vt., Sept. 7-8. Dr. Elbridge E. Johnston, 122 Railroad St., St. Johnsbury, Vt., Governor.

New Mexico, Albuquerque, Oct. 16. Dr. Robert Friedenberg, 143 Madison St. N.E., Albuquerque, Governor.

Minot, N. D., September 8. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

Western New York, Albany, Oct. 19. Dr. John H. Talbott, 100 High St., Buffalo 3, Governor.

West Virginia, Charleston, Sept. 29. Dr. Paul H. Revercomb, 1031 Quarrier St., Charleston 1, W. Va., Governor.

SOUTHEASTERN ALLERGY ASSOCIATION, Charlotte, N. C., Oct. 5-6. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia 1, S. C., Secretary.

U. S. SECTION, INTERNATIONAL COLLEGE OF SURGEONS, Palmer House, Chicago, Sept. 9-13. Dr. Ross T. McIntire, 1516 Lake Shore Drive, Chicago 10, Executive Director.

UTAH STATE MEDICAL ASSOCIATION, Hotel Utah, Salt Lake City, Sept. 6-8. Mr. Harold Bowman, 42 South Fifth East St., Salt Lake City 2, Executive Secretary.

VERMONT STATE MEDICAL SOCIETY, Wentworth-by-the-Sea, Newcastle, N. H., Sept. 27-29. Dr. Robert L. Richards, 128 Merchants Row, Rutland, Secretary.

VIRGINIA, MEDICAL SOCIETY OF, Hotel Roanoke, Roanoke, Oct. 14-17. Mr. Robert I. Howard, 105 West Franklin St., Richmond 20, Executive Secretary.

TENNESSEE VALLEY MEDICAL ASSEMBLY, Read House, Chattanooga, Oct. 1-2. Dr. Harry E. Jones, 109 Medical Arts Bldg., Chattanooga 2, Secretary.

WASHINGTON STATE MEDICAL ASSOCIATION, Olympic Hotel, Seattle, Sept. 16-19. Mr. Ralph W. Neill, 1309 Seventh Ave., Seattle 1, Executive Secretary.

## FOREIGN AND INTERNATIONAL

ASSOCIATION OF INDUSTRIAL MEDICAL OFFICERS, London School of Hygiene and Tropical Medicine, London, W.C.1, England, Sept. 24-28, 1956. Dr. J. A. A. Mekelburg, Peek, Frean and Company, Ltd., Keetons Rd., Bermondsey, London, S.E. 16, England, Honorable Secretary.

AUSTRIAN CONGRESS OF INDUSTRIAL MEDICINE, Vienna, Austria, Oct. 1-4, 1956. Dr. Ch. Frieberger, Austrian Society for Industrial Medicine, Kinderspitalgasse 15, Vienna, Austria, Organizing Secretary.

BAHAMAS MEDICAL CONFERENCE, Princess Margaret Hospital, Nassau, Bahamas, Dec. 1-15, 1956. For information address: Dr. B. L. Frank, 4th Floor, 550 Fifth Ave., New York 36, N. Y., U. S. A.

CANADIAN MEDICAL ASSOCIATION, Edmonton, Alberta, Canada, June 17-21, 1957. Dr. A. D. Kelly, 150 St. George Street, Toronto 5, Ont., Canada, General Secretary.

CANADIAN PHYSIOLOGICAL SOCIETY, University of Montreal, Montreal, P. Q., Canada, Oct. 18-20, 1956. Dr. J. M. R. Beveridge, Dept. of Biochemistry, Queen's University, Kingston, Ont., Canada, Secretary.

CHILEAN CONGRESS OF INTERNAL MEDICINE, Santiago, Chile, S. A., Oct. 1-6, 1956. Prof. Francisco Rojas Villegas, Avda. Bernardo O'Higgins 160, Hospital San Fco. de Borja, Santiago, Chile, S. A., Secretario General del Congreso.

CONGRESS OF FRENCH SOCIETY OF OPHTHALMOLOGY, Paris, France, May 12-16, 1957. Dr. Marcel Kalt, 81 rue Saint-Lazare, Paris 9e, France, Secretary.

CONGRESS OF INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Phoenix, Ariz., U. S. A., April 1-4, 1957. For information address: Dr. A. William Friend, Wade Park Manor, Cleveland 6, Ohio, U. S. A.

CONGRESS OF INTERNATIONAL ASSOCIATION OF LOGOPEDICS AND PHONIATRICS, Barcelona, Spain, Sept. 3-7, 1956. Dr. J. Perello, Provenza 319, Barcelona 9, Spain, Secretary-General.

*(Continued on page 32)*

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1. Kloha, M.W.; Draper, M.D., and Keller, F.: Alkaloids of Rauwolfia Serpentina Benth. III. Rescinnamine, a New Hypotensive and Sedative Principle, J. Am. Chem. Soc. 76:2843 (1954).
2. Cronheim, G.; Brown, W.; Cawthorne, J.; Toekes, M.I., and Ungari, J.: Pharmacological Studies with Rescinnamine, a New Alkaloid Isolated from Rauwolfia Serpentina, Proc. Soc. Exper. Biol. & Med. 86:120 (May) 1954.
3. Gourzis, J.T.; Sonnenschein, P.R., and Barden, R.: Alterations in Cardiovascular Responses of the Dog Following Rauwiloid, an Alkaloidal Extract of Rauwolfia Serpentina, Proc. Soc. Exper. Biol. & Med. 85:463 (Mar.) 1954.
4. Hershberger, R.; Hughes, W., and Dennis, E.: Clinical Results in the Treatment of Hypertension with Rescinnamine, Clin. Res. Proc. 3:71 (Feb.) 1955.
5. Smirk, F.H., and McQueen, E.G.: Comparison of Rescinnamine and Reserpine as Hypotensive Agents, Lancet 2:115 (July 16) 1955.


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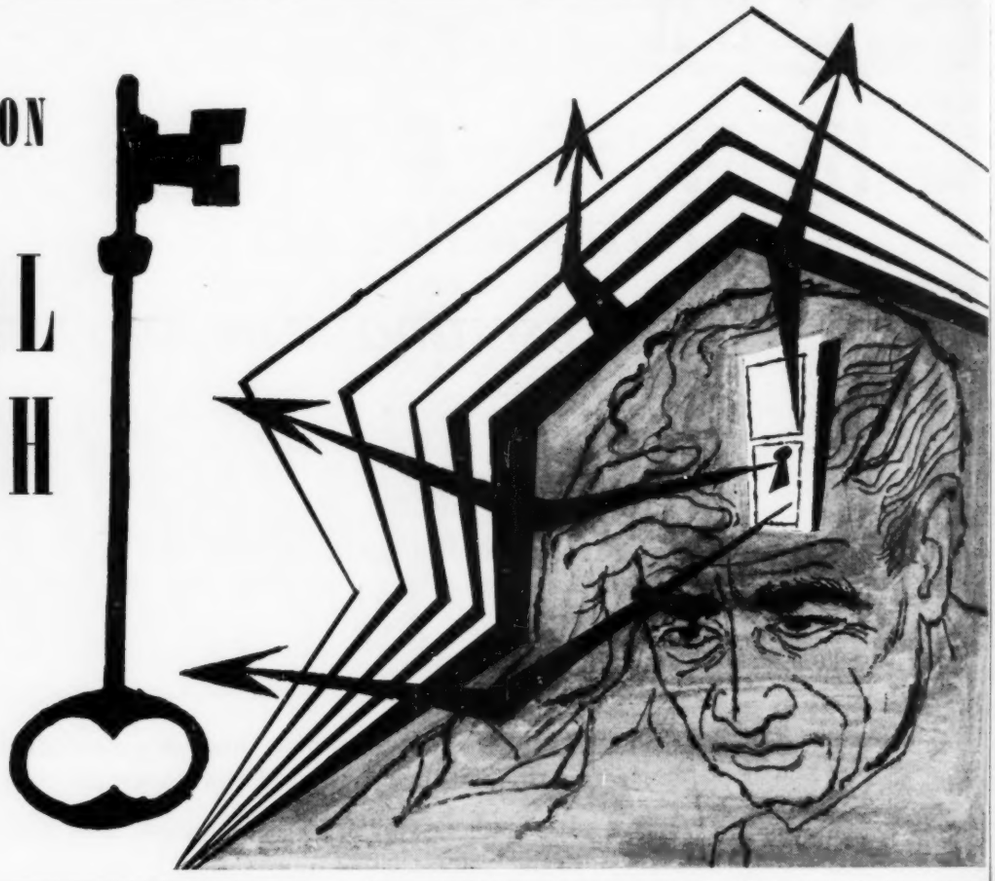

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CONGRESS OF INTERNATIONAL SOCIETY OF AUDIOLOGY, St. Louis, Missouri, U. S. A., May 14-16, 1957. For information address: Dr. S. Richard Silverman, 818 South Kingshighway, St. Louis 10, Missouri, U. S. A.

CONGRESS OF INTERNATIONAL SOCIETY OF HEMATOLOGY, Hotel Somerset, Boston, Mass., U. S. A., Aug. 27-Sept. 1, 1956. Dr. W. C. Moloney, 39 Bay State Road, Boston, Mass., U. S. A., Secretary.

CONGRESS OF INTERNATIONAL UNION AGAINST TUBERCULOSIS, New Delhi, India, Jan. 3-6, 1957. For information address: Secretariat, The Union, 66 Boulevard Saint-Michel, Paris 6e, France.

EUROPEAN CONGRESS OF ALLERGOLOGY, Florence, Italy, Sept. 12-15, 1956. Prof. Umberto Serafini, Instituto de Patologia Medica, Viale Morgagni, Florence, Italy, Secretary-General.

EUROPEAN CONGRESS OF CARDIOLOGY, Stockholm, Sweden, Sept. 10-14, 1956. Dr. Karl Erik Grewin, Sodersjukhuset, Stockholm, Sweden, General Secretary.

GERMAN GYNAECOLOGICAL SOCIETY, Heidelberg, Germany, Sept. 18-22, 1956. For information address: Prof. Dr. Hans Runge, Universitats-Frauenklinik, Heidelberg, Germany.

IBERO LATIN AMERICAN CONGRESS OF DERMATOLOGY, Mexico, D. F., Mexico, Oct. 21-27, 1956. Dr. Manuel Malacara, Centro Dermatologico Pascua, Calle Dr. Garciadiego 21, Mexico 7, D. F., Mexico, Secretario.

INTER-AMERICAN CONFERENCE ON OCCUPATIONAL MEDICINE AND TOXICOLOGY, Miami, Fla., U. S. A., Sept. 3-7, 1956. Dr. Homer F. Marsh, Dean, School of Medicine, University of Miami, Coral Gables 46, Fla., U. S. A., General Chairman.

INTER-AMERICAN CONGRESS OF CARDIOLOGY, Havana, Cuba, Nov. 11-17, 1956. For information address: Dr. Ramon Aixala, Apartado 2108, Havana, Cuba.

INTER-AMERICAN CONGRESS OF PAN AMERICAN MEDICAL ASSOCIATION, Mexico City, Mexico, April 15-21, 1957. Dr. Joseph J. Eller, 745 Fifth Ave., New York 22, N. Y., U. S. A., Executive Director.

INTERIM CONGRESS OF PAN AMERICAN ASSOCIATION OF OPHTHALMOLOGY, Hotel Statler, New York, N. Y., U. S. A., April 7-10, 1957. Dr. Brittain F. Payne, 17 East 72d Street, New York 21, N. Y., U. S. A., President.

INTERNATIONAL CANCER CYTOLOGY CONGRESS, Drake Hotel, Chicago, Illinois, U. S. A., Oct. 8-13, 1956. For information address: Dr. A. H. Dearing, College of American Pathologists, Prudential Plaza, Suite 2115, Chicago 1, Illinois, U. S. A.

INTERNATIONAL CONGRESS AGAINST ALCOHOLISM, Istanbul, Turkey, Sept. 10-15, 1956. For information address: International contre l'Alcoolisme, Case Gare 49, Lausanne, Switzerland.

INTERNATIONAL CONGRESS OF ANTHROPOLOGICAL AND ETHNOLOGICAL SCIENCES, Philadelphia, Pa., U. S. A., Sept. 1-9, 1956. Dr. William N. Fenton, National Research Council, Division of Anthropology and Psychology, 2101 Constitution Avenue, Washington 25, D. C., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF CLINICAL CHEMISTRY, Barbizon-Plaza Hotel, New York, N. Y., U. S. A., Sept. 9-14, 1956. Dr. Albert E. Sobel, Jewish Hospital, 555 Prospect Place, Brooklyn 38, N. Y., U. S. A., Chairman.

INTERNATIONAL CONGRESS OF CLINICAL PATHOLOGY, Brussels, Belgium, July 15-20, 1957. Prof. M. Welsch, Service de Bacteriologie et de Parasitologie, Universite de Liege, 32 Blvd. de la Constitution, Liege, Belgium, Secretary General.

INTERNATIONAL CONGRESS OF DERMATOLOGY, Stockholm, Sweden, July 31-Aug. 5, 1957. Dr. C. H. Floden, Karolinska, Sjukhuset, Hudkliniken, Stockholm 60, Sweden, Secretary General.

INTERNATIONAL CONGRESS OF DIETETICS, Congress Palace, Esposizione Universale Roma, Rome, Italy, Sept. 10-14, 1956. Prof. E. Serianni, Associazione Dietetica Italiana, via dei Penitenzieri N 13, Rome, Italy, Secretary General.

INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST, Cologne, Germany, Aug. 19-23, 1956. Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Illinois, U. S. A., Executive Director.

INTERNATIONAL CONGRESS OF ELECTROENCEPHALOGRAPHY AND CLINICAL NEUROPHYSIOLOGY, Brussels, Belgium, July 21-28, 1957. For information address: Dr. R. G. Bickford, Mayo Clinic, Rochester, Minnesota, U. S. A.

INTERNATIONAL CONGRESS ON THE HISTORY OF MEDICINE, Madrid and Salamanca, Spain, Sept. 21-28, 1956. For information address: Prof. Dr. Luis S. Graniel, Instituto Arnaldo de Vilanova de Historia de la Medicina, Duque de Medinaceli, 4, Madrid, Spain.

INTERNATIONAL CONGRESS FOR THE HISTORY OF SCIENCE, Florence and Milan, Italy, Sept. 3-10, 1956. Dr. M. L. Bonelli, Instituto di Ottica, Arcetri, Florence, Italy, Secretary-General.

INTERNATIONAL CONGRESS OF HYDATID DISEASE, Athens, Greece, Sept. 14-18, 1956. Prof. B. Kourias, Croix Rouge Hellenique, 1 rue Mackenzie King, Athens, Greece, Secretary-General.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Madrid, Spain, Sept. 19-23, 1956. Dr. J. C. De Oya and Dr. J. Gimena, Hostaleza No. 90, Madrid, Spain, Secretaries.

INTERNATIONAL CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, Palmer House, Chicago, Illinois, U. S. A., Sept. 9-13, 1956. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF INTERNATIONAL SOCIETY OF BRONCHOESOPHAGOLOGY, Philadelphia, Pennsylvania, U. S. A., May 12-13, 1957. Dr. Chevalier L. Jackson, 1901 Walnut St., Philadelphia 3, Pennsylvania, U. S. A., Secretary.

INTERNATIONAL CONGRESS ON MEDICAL RECORDS, Shoreham Hotel, Washington, D. C., U. S. A., Oct. 1-5, 1956. For information address: Miss Doris Gleason, Executive Director, American Association of Medical Record Librarians, 510 North Dearborn St., Chicago 10, Illinois, U. S. A.

INTERNATIONAL CONGRESS ON MEDICAL AND SCIENTIFIC FILM, Palace of Expositions ot the Valentino, Turin, Italy, June 1-9, 1957. For information address: Secretariat, Minerva Medica. Corso Bramante 83-85, Turin, Italy.

INTERNATIONAL CONGRESS ON MEDICINE AND SURGERY, Palazzo of Expositions at the Valentino, Turin, Italy, June 1-9, 1957. For information address: Segreteria Generale, Minerva Medica. Corso Bramante 83-85, Turin, Italy.

INTERNATIONAL CONGRESS OF NEUROLOGICAL SCIENCES, Brussels, Belgium, July 21-28, 1957. For information address: Dr. Pearce Bailey, National Institute of Health, Bethesda 14, Maryland, U. S. A.

INTERNATIONAL CONGRESS OF NEUROPATHOLOGY, Brussels, Belgium, July 21-28, 1957. Dr. Ludo Jan Bogaert, 47 rue de l'Harmonie, Antwerp, Belgium, Secretary General.

INTERNATIONAL CONGRESS OF NUTRITION, Paris, France, July 24-29, 1957. For information address: Congress International de Nutrition, 71 Blvd. Pereire, Paris 17e, France.

INTERNATIONAL CONGRESS ON OCCUPATIONAL HEALTH, Helsinki, Finland, July 1-6, 1957. Dr. Pentti Sumari, c/o Tyoter Veyslaitos, Haattmaninkatu 1, Helsinki-Toolo, Finland, Secretary General.

INTERNATIONAL CONGRESS OF OTOLARYNGOLOGY, Hotel Statler, Washington, D. C., U. S. A., May 5-10, 1957. Dr. Paul H. Holinger, 700 North Michigan Ave., Chicago 11, Illinois, U. S. A., General Secretary.

INTERNATIONAL CONGRESS ON RHEUMATIC DISEASES, Toronto, Ont., Canada, June 23-30, 1957. For information address: International Congress on Rheumatic Diseases, P. O. Box 237, Terminal "A," Toronto, Ont., Canada.

INTERNATIONAL GENETICS SYMPOSIUM, Tokyo and Kyoto, Japan, Sept. 6-12, 1956. For information address: Secretary, International Genetics Symposium, Science Council of Japan, Ueno Park, Tokyo, Japan.

INTERNATIONAL GERONTOLOGICAL CONGRESS, Merano-Bolzano, Italy, July 14-19, 1957. For information address: Segreteria, Quarto Congresso Internazionale de Gerontologia, Viale Morgagni, 85, Firenze, Italy

INTERNATIONAL LEAGUE AGAINST EPILEPSY, Brussels, Belgium, July 21-28, 1957. Dr. Radermecker, Institut Bunge, 59 rue Philippe Williot, Berchem, Antwerp, Belgium, Secretary General.

INTERNATIONAL NEUROLOGICAL CONGRESS, Brussels, Belgium, July 21-28, 1957. Dr. Ludo van Bogaert, Institut Bunge, 59 rue Philippe Williot, Berchem, Antwerp, Belgium, Secretary General.

INTERNATIONAL PROFESSIONAL UNION OF GYNECOLOGISTS AND OBSTETRICIANS, Madrid, Spain, Sept. 28-29, 1956. Dr. Jacques Courtois, 1 rue Racine, St-Germain-en-Laye (S and O), France, Permanent International Secretary-General.

INTERNATIONAL SCIENTIFIC CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, University City, Mexico, D. F., Mexico, Feb. 24-28, 1957. For information address: Secretary, Mexican Congress, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Ill., U. S. A.

INTERNATIONAL SOCIETY OF GEOGRAPHICAL PATHOLOGY, Paris, France, July 9-12, 1957, Dr. Fred C. Roulet, Hebelstr. 24, Basle, Switzerland, Secretary General.

INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, London, England, July 22-27, 1957. For information address: Miss M. Drury, 34 Eccleston Square, London S.W.1, England.

INTERNATIONAL SYMPOSIUM ON MEDICAL-SOCIAL ASPECTS OF SENILE NERVOUS DISEASES, Venice, Italy, July 20-21, 1957. For information address: Secretariate, Viale Morgagni 85, Firenze, Italy.

LATIN AMERICAN CHAPTER, INTERNATIONAL SOCIETY OF ANGIOLOGY, Havana, Cuba, Nov. 8-11, 1956. Dr. Armando Nuñez Nuñez, 25 No. 510 Vedado, Havana, Cuba, President.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION, EXTRAORDINARY GENERAL ASSEMBLY, Burgenstock, Nidwalden, Switzerland. Sept. 21-24, 1956. Dr. Janet Aitken, 30a Acacia Road, London, N.W.1, England, Secretary.

NEURORADIOLOGIC SYMPOSIUM, Brussels, Belgium, July 21-28, 1957. For information address: Professor Melot, Brussels, Belgium.

PAN AMERICAN CONGRESS ON CANCER CYTOLOGY, Eden Roc Hotel, Miami Beach, Fla., U. S. A., April 25-29, 1957. Dr. J. Ernest Ayre, 1155 N.W. 14th St., Miami, Fla., U. S. A., General Chairman.

PAN AMERICAN CONGRESS OF GERONTOLOGY, Mexico, D. F., Mexico, Sept. 15-22, 1956. Dr. Manuel Payno, Avenida Cuauhtemac, 10-3 Mexico 6, D. F., Mexico, Presidente.

PAN AMERICAN HOMEOPATHIC MEDICAL CONGRESS, Hotel Del Prado, Mexico City, D. F., Mexico, Oct. 14-27, 1956. Dr. Ralph W. Bohn, 60 Sutton Place South, New York 22, N. Y., U. S. A., Secretary.

PERSIAN GULF MEDICAL SOCIETY, Dhahran, Saudi Arabia, Nov. 14-15, 1956. For information address: Dr. Robert C. Page, Medical Director, Arabian American Oil Company, Dhahran, Saudi Arabia.

WILLIAM HARVEY TERCENTENARY CONGRESS, Royal College of Surgeons, London, England, June 3-7, 1957. Dr. D. Geraint James, Harveian Society of London, 11 Chandos St., Cavendish Square, London, W.1., England, Honorary Secretary.

WORLD CONGRESS FOR ACUPUNCTURE, Vienna, Austria, May 25-28, 1957. For information address: Austrian Association for Acupuncture, XV, Schwenderstrasse 57, Vienna, Austria.

WORLD CONGRESS OF INTERNATIONAL ABOLITIONIST FEDERATION, Frankfort-am-Main, Germany, Oct. 17-19, 1956. For information address: Federation Abolitionniste Internationale, Place des Nations, Genève, Switzerland.

WORLD MEDICAL ASSOCIATION, Havana, Cuba, Oct. 9-15, 1956. Dr. Louis H. Bauer, 10 Columbus Circle, New York 19, New York, U. S. A., Secretary-General.

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**Because of the vast metabolic influence normally exerted by estrogen** during the reproductive years, declining ovarian function often provokes a variety of symptoms which are not as easily recognized as the "hot flushes" but which, nonetheless, are manifestations of estrogen deficiency. Tachycardia, dyspnea and palpitations have been observed in nearly 70 per cent of cases, and a symptomatic triad of cold extremities, numbness, and tingling in over 48 per cent.[9] Symptoms involving the musculoskeletal system simulating arthritic conditions are not infrequent[9-12] and manifestations of nervous or emotional character are present in the majority of patients.[9]

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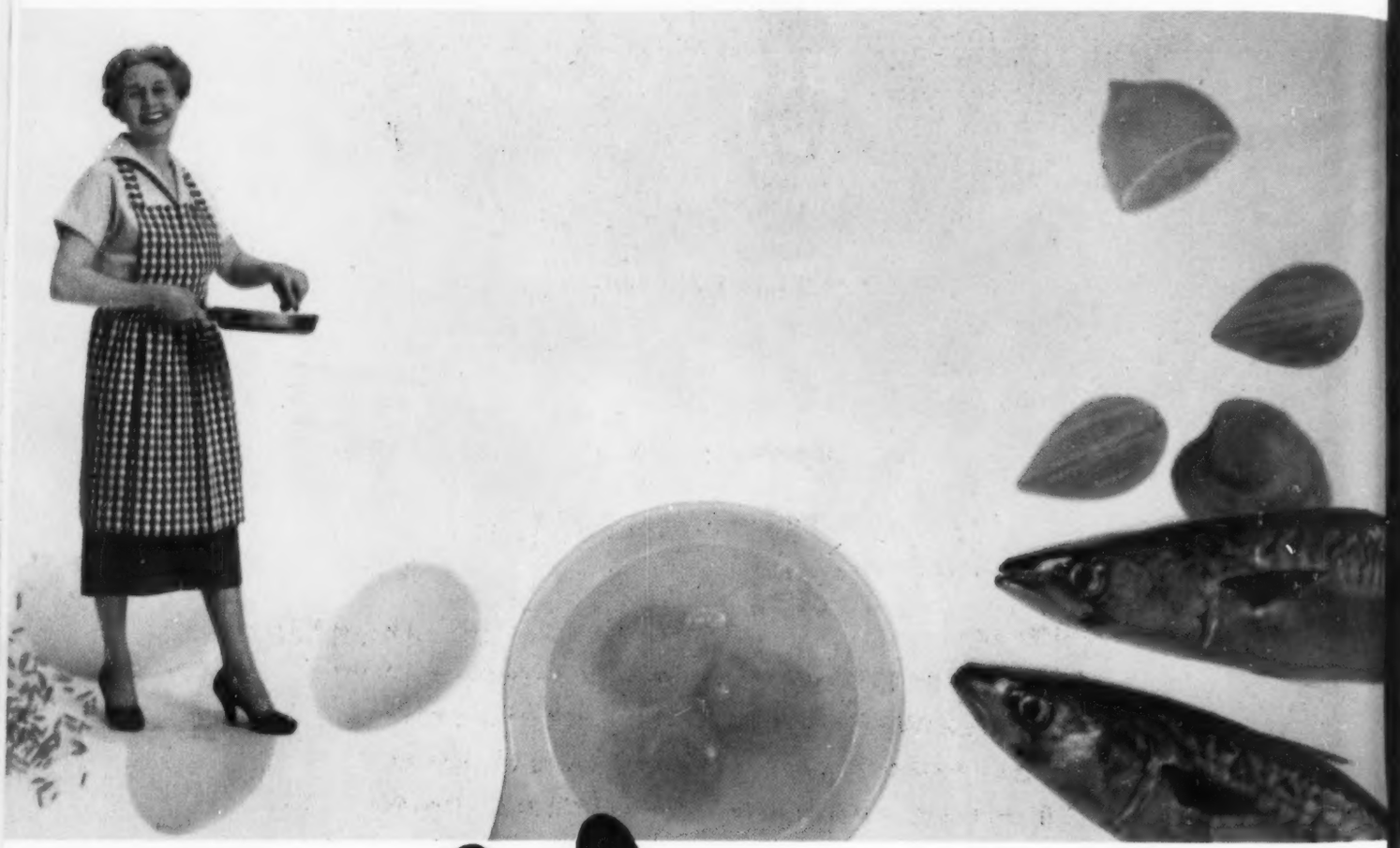

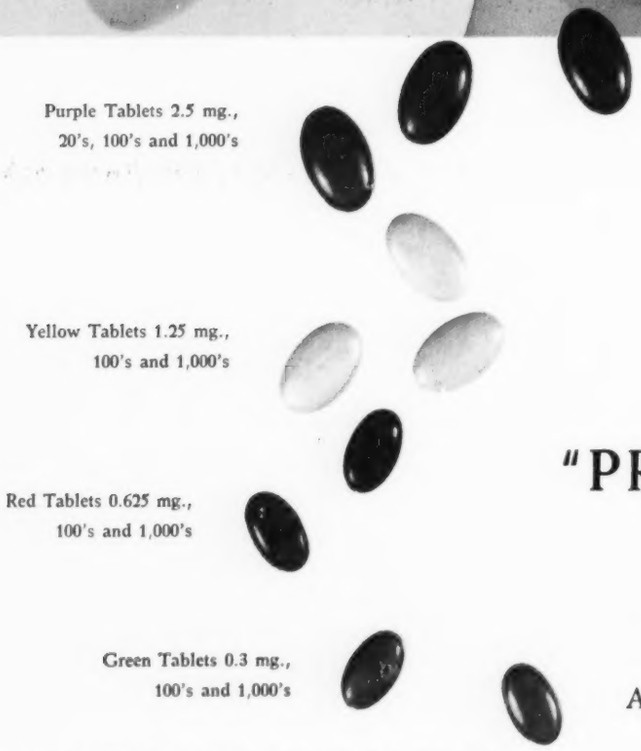

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When there are symptoms of declining ovarian function, "Premarin" produces prompt relief of physical distress and imparts a feeling of "well-being." "Premarin" presents the complete equine estrogen-complex. Has no odor, imparts no odor.

Average Dosage: 1 to 3 tablets (1.25 to 3.75 mg.) daily, in 21 day courses with a rest period of one week. For further details, see facing page.

# "PREMARIN"® Conjugated estrogens (equine)

in the menopause and
pre- and postmenopausal syndrome

Ayerst Laboratories, New York, N. Y. • Montreal, Canada

*recognized*
as a potent, specific anti-arthritic

*established*
by over 100 million patient days

*substantiated*
in more than 700 published reports

# BUTAZOLIDIN®

(phenylbutazone GEIGY)

## potent, specific anti-arthritic

Based on an impressive background of achievement attained over a period of four years involving both long-term and short-term therapy in all the major forms of arthritis, BUTAZOLIDIN is recognized as one of the most effective anti-arthritic agents currently available.

*relieves pain*
*improves function*
*resolves inflammation*

BUTAZOLIDIN being a potent therapeutic agent, physicians unfamiliar with its use are urged to send for literature before prescribing it.

GEIGY

GEIGY PHARMACEUTICALS, Division of Geigy Chemical Corporation, New York 13, N.Y.

*Candid Glimpses*

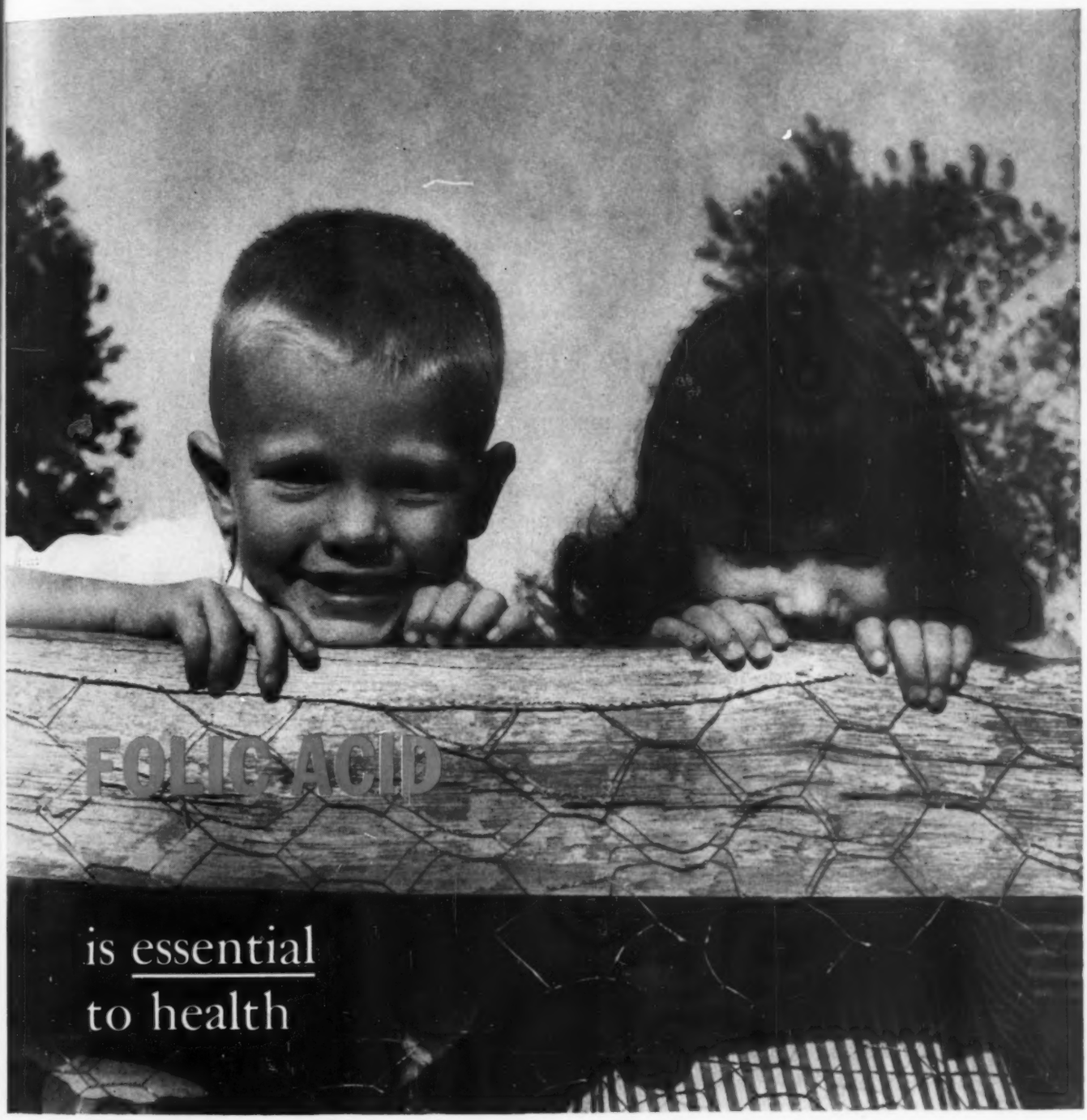
**INTO THE DOCTOR'S OFFICE**

ANOTHER BANNISTER BABY

**"Well! I'm not THAT old, Doctor!"**

**DEPENDABLE PRESCRIPTION SERVICE—FOR OVER 55 YEARS**

Walgreen DRUG STORES




## consider it when you diagnose a vitamin deficiency

Because Folic Acid is necessary to the normal formation of *all* body cells, it should be present in the diets of all persons, at every age. Although many foods contain it, some diets do not provide it in adequate amounts.

When you prescribe for the vitamin-deficient patient, consider this need for Folic Acid. Most leading pharmaceutical manufacturers offer it in various convenient forms.

**FOLIC ACID** —*essential*
—*recognized*
—*important*

***AMERICAN CYANAMID COMPANY***
Fine Chemicals Division, 30 Rockefeller Plaza, N. Y. 20, N. Y.

# Meat...

## *Good Nutrition and Endocrine Functioning*

Maintenance of homeostasis attuned to health devolves upon good nutrition and normal functioning of the enzyme and endocrine systems.[1,2,3] Conversely, by impairing vital activities of the endocrines, poor nutrition can seriously disturb production of hormones needed to regulate metabolic processes.

Intense and prolonged deficiency in essential nutrients and food energy depresses pituitary, gonadal, and other endocrine activity, leading to subnormal physiologic states. Clinical studies exposing male volunteer subjects to a semistarvation diet produced symptoms resembling those of various endocrine dysfunctions.[4] Since the pituitary and other hormones are protein in nature, it appears logical to assume that protein nutrition plays an important part in their synthesis.[5]

Meat, by supplying valuable amounts of high quality protein, B vitamins, essential minerals, and fat containing unsaturated fatty acids, contributes importantly to any role that good nutrition may play in the maintenance of the endocrines, their functioning, and the production of hormones.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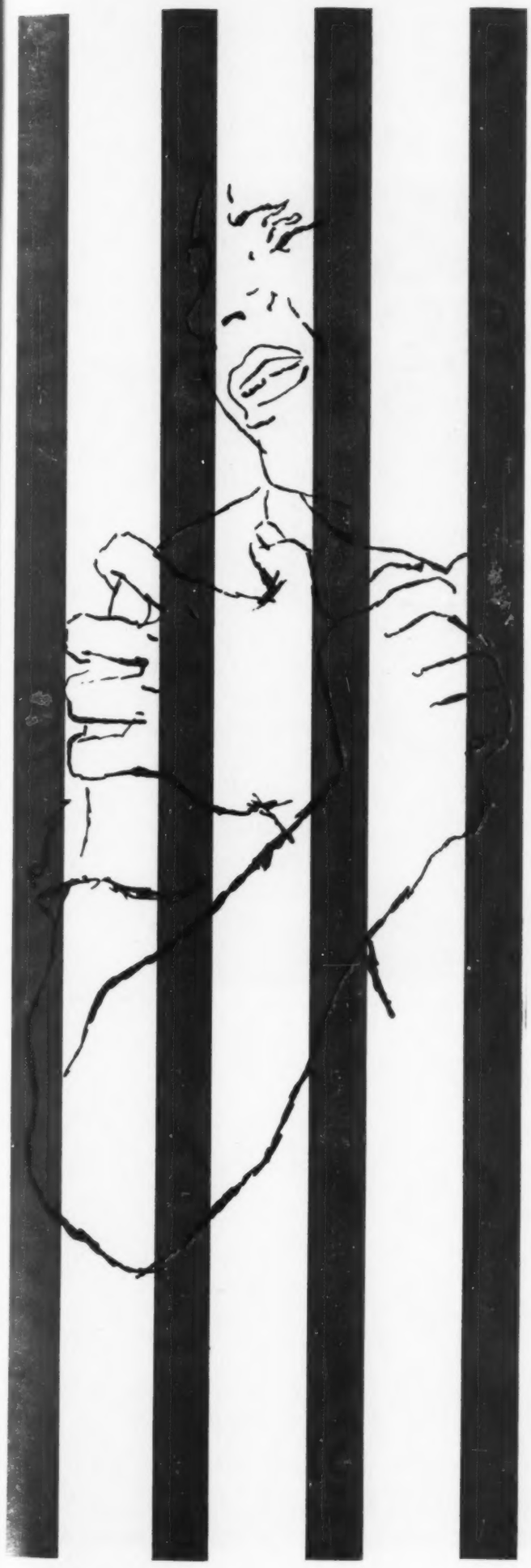
The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.


**American Meat Institute**
**Main Office, Chicago... Members Throughout the United States**



# In Withdrawal Syndromes

## Alcoholism

## Drug addiction

As an agent to calm the acutely agitated, SPARINE has brought decisive relief to many hundreds of patients suffering from severe withdrawal symptoms.† SPARINE is rapidly effective by intravenous administration; maintenance is by the oral or intramuscular route.

*In postalcoholic states,* SPARINE offers prompt and marked remission of delirium tremens, acute hallucinosis, and tremulousness.†

*In drug-addiction withdrawal,* it promotes comfort by controlling nausea and vomiting and by inducing a view of detachment toward muscle and bone pains, abdominal cramps, and the general malaise.†

SPARINE is also effective in the management of acutely agitated psychotic patients. It tranquilizes them, making them more easily controlled and accessible to psychotherapy.†

†References on request.

**NEW Potent Ataractic Drug**

# Sparine*

Promazine Hydrochloride

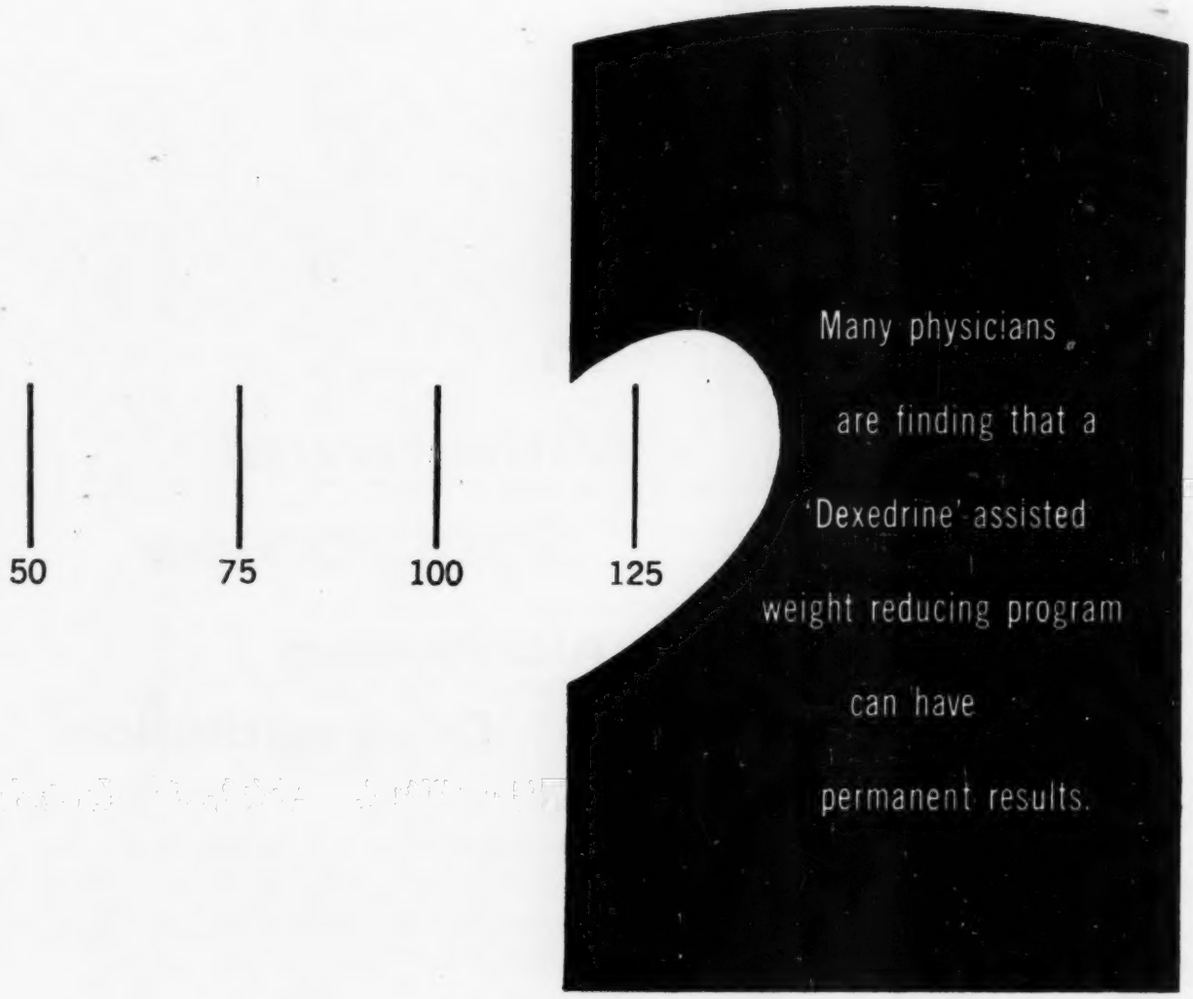
10-[γ-dimethylamino-n-propyl]-phenothiazine hydrochloride

Hydrochloride

*Trademark

Wyeth®

Philadelphia 1, Pa.




'Dexedrine' not only curbs appetite during weight reduction therapy, but also helps maintain weight loss. While on 'Dexedrine' therapy, the patient becomes accustomed to a lowered food intake. When 'Dexedrine' is withdrawn, the adjustment to new eating habits made with 'Dexedrine' ordinarily persists.

**Dexedrine* Sulfate** (dextro-amphetamine sulfate, S.K.F.)
Tablets • Elixir • Spansule† capsules

*made only by*
Smith, Kline & French Laboratories, Philadelphia
*first in sustained release oral medication*

*T.M. Reg. U.S. Pat. Off. †T.M. Reg. U.S. Pat. Off. for sustained release capsules, S.K.F. Patent Applied For.

# when the geriatric problem is constipation

# DIOVAC

(Brand of dioctyl sodium sulfosuccinate)

*DIOVAC promotes normal evacuation through normal bowel function by permitting moisture to penetrate and soften the hard fecal mass; thus it corrects constipation naturally, without the risks or compromises of drastic laxation—an excellent preparation not only for the elderly but for patients of all ages.*

## new nonlaxative with moistage action

*in bottles of 50*

*Dry-filled* for maximum moisture penetration and no aftertaste.

*in 6 oz. bottles*

Refreshingly mint flavored.

**DOSAGE:** One DIOVAC CAPSULE (50 mg.) or 1-2 tsp. of DIOVAC SYRUP (20-40 mg.) once or twice daily followed by a glass of water.

**BIBLIOGRAPHIC BACKGROUND**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GRAY PHARMACEUTICAL CO., INC. NEWTON 58, MASSACHUSETTS

# From other Pages

## Religion in Indian Medical Practice

Indians think that the approach of Western doctors is entirely too materialistic. Religion permeates every phase of their life, and religious beliefs are of special importance in questions of health and disease. The cold scientific attitude which certain Western physicians cultivate seems heartless to most Indians. The technical skill of the physician is considered secondary to his ability to align divine powers on the side of the patient he is trying to cure. Old-school Indian practitioners pride themselves on their human touch and practical psychology. In this they resemble our old family doctors and modern advocates of the psychosomatic approach to medical care.

The most crucial moment in the doctor-patient relationship comes when the physician completes his examination. Very formally then he is supposed to make a statement of prognosis which enlists divine aid. The equivalent of an incantation is expected, such as "By the grace of God this patient is going to get well." The prognosis must be favorable and definite. He can then go on to throw in any qualifications that he thinks necessary.

Shortly after I started to practice in India, a young doctor took me to his home in a neighboring town to see his sister who was said to be dying from typhoid. The father was a hakim of great reputation and had a lifetime of experience in the practice of the old Unani or Indo-Arabic-Greek school of medicine. He was not only a wise practitioner but also a highly cultured gentleman. His English was fluent, he had traveled extensively, and he seemed to me to have achieved a unique blending of Eastern and Western culture. The girl was in her second relapse of very severe typhoid, which was complicated both by cardiac damage and a severe nephritis with advanced uremia and deep coma. It was immediately evident that the prognosis was hopeless, but I went through the motions of a thorough examination. Then we adjourned to the hakim's study.

The impression of being with persons of a Western rationalistic approach was so strong that, without thinking, I spoke as I would have to a fellow doctor in America and started by guarding my prognosis. I said, "Of course, you realize that your girl's condition is extremely critical and her prognosis poor but —." The shocked look on the father's face stopped me. He threw both hands in the air and cursed me for having placed a curse on his daughter. He dissolved completely into a frightful demonstration of loud wailing and crying; he pulled his hair and beat his breast. His constant refrain was that I had placed the curse of the Christian God on his daughter and now she had no chance of recovery. The doctor son quickly ushered me out and on our way home explained to me the cultured practice of first enlisting God's help. My chagrin was made more acute by the fact that I was in India as a Christian missionary. In spite of my best efforts, my friendship with the family was never re-established.

Having learned the hard way, I have never since felt the slightest hesitation about bringing God into my medical practice. I should have learned this in boyhood from watching my father in his medical work in Indian villages. He brings God into his daily life with Scotch Presbyterian forthrightness, and the village people love him for it. I have heard them say that he is a better doctor than the most famous surgeons in the biggest hospitals because he is a godly man.—Carl E. Taylor, M.D., Country Doctor in India, *The Atlantic Monthly*, June, 1956.

## Medical Critics and Initiators

Paracelsus (1493-1541), paradoxical as it may seem, was among the first to breach the strongholds of ancient medicine. He not only burned the works of Galen and Avicenna (that is according to tradition—Sudhoff denies it) but more significantly, he challenged the effectiveness of the Galenic simples, substituted for them quintessential tinctures and distillates, and introduced alchemical elements such as mercury, lead, sulphur, iron, arsenic, copper sulphate, and potassium sulphate into medicinal use. Far more effective in the tearing down of ancient, tl at is of Galenic medicine, was the anatomist Andreas Vesalius. Not only did De Fabrica Humani Corporis (1543) show up the faults and errors of Galenic anatomy, but it provided the essential basis, the foundation, for the objective study of medicine in all its manifold divisions. Harvey, in his epoch making work, not only initiated the modern study of physiology, but demonstrated more effectively than ever Bacon did in his sonorous expositions, the fruitfulness of the inductive method.

Paracelsus, Vesalius and Harvey were medical critics and initiators, but medicine itself was not immune to the effects of the philosophical innovations of Bacon and Descartes, nor was medicine unaffected by the new scientific discoveries of Copernicus and Galileo. Indeed, medicine took on the complexion of the prevailing age, and in medicine too, it came to be thought that all bodily processes took place in accordance with the known laws of physics and chemistry. Two schools of thought issued therefrom—the iatro-chemical and the iatro-mechanical. The leader of the first was Sylvius (Franz de la Boe—1614-1672), professor of Leyden. The founder of the iatro-physical, or as it was also termed the iatro-mechanical school was Giovanni Alfonso Borelli (1608-1679). Both schools soon gained many adherents. Since chemistry was then still an undeveloped science, the iatro-chemical school of medicine soon became entangled in many finespun speculations. The iatro-physicists, on the other hand, achieved some clear insights into the fine mechanical and structural operations of the body. Yet neither school proved satisfactory in guiding and sustaining the physician in his efforts to comprehend health and disease, and in his endeavor to bring the ailing individual back to health.

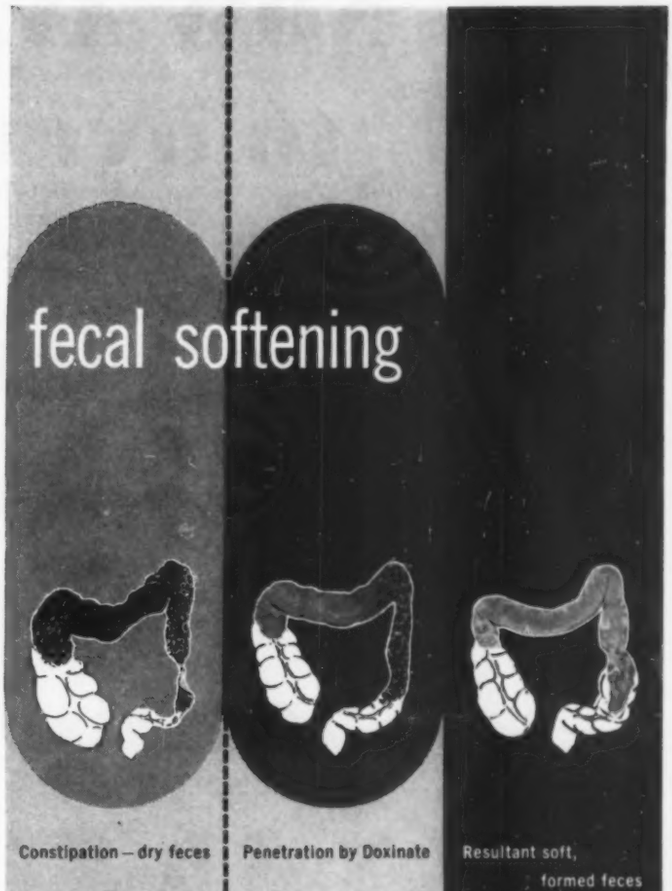
Physicians of great stature and generous endowments, men like Sydenham (1624-1689) and Boerhaave, cast all schools and systems aside and reverted to the Hippocratic vision of man and the universe, and to the methodic-empirical practice of medicine. Sydenham has been termed the English Hippocrates. Boerhaave (1668-1738) instituted the modern system of clinical, that is bedside, teaching and because so many students from all parts of Europe came to study with him at the Universiy of Leyden, he was titled "communis Europae praeceptor." But neither Sydenham nor Boerhaave could stem the tide of speculative theorizing, nor effect a return to the simple yet embracive methods of Hippocratic study and observation.—I. Galdston, M.D., The Romantic Period in Medicine, *Bulletin of the New York Academy of Medicine*, May, 1956.

FOR YOUR THERAPY OF CONSTIPATION . . .

# new type action: fecal softening

# DOXINATE*

Fecal Softener




## WHAT IT IS . . .

The original dioctyl sodium sulfosuccinate for constipation.

## WHAT IT DOES . . .

Doxinate softens the feces—and does nothing else. This is a wholly new principle for treating constipation.

Doxinate permeates hard constipated bowel contents and causes the fecal mass to retain fluids.[1] Once Doxinate has produced soft, formed stools, normal peristalsis completes evacuation. There is no laxative or bulk effect, nor any oily lubrication.

permits normal bowel habits

dosage: Adults: 2 or 3 capsules daily.
Infants: 1 or 2 cc. once daily in milk, formula or fruit juice.

supplied: Doxinate capsules: each green transparent capsule contains 60 mg. dioctyl sodium sulfosuccinate – bottles of 30 and 100.

Doxinate Solution 5%: each 1 cc. contains 50 mg. dioctyl sodium sulfosuccinate; 60 cc. bottle with dropper calibrated at 1 cc.

New standard dosage form.

1. Wilson, J. L., and Dickinson, D.G.: J.A.M.A. *158*:261 (May 28) 1955.

*Patent Pending

LLOYD brothers, inc.
Cincinnati 3, Ohio

"In the Interest of Medicine Since 1870"

# NOW AVAILABLE

## to overcome certain specific infections that do not respond to any other antibiotic[1,2,3]...

## New...

TODAY'S resistant pathogens are the tough survivors of a dozen widely used antibiotics. Certain organisms, notably *Staphylococcus aureus*[4] and susceptible strains of *Proteus vulgaris*, produce infections which have been resistant to *all* clinically useful antibiotics.

To augment your armamentarium against these resistant infections, 'CATHOMYCIN' (Novobiocin, Merck), derived from an organism recently discovered and isolated in the Merck Sharp & Dohme Research Laboratories[1], is now available.

**SPECTRUM**—'CATHOMYCIN'[1, 2, 3, 5, 6] has also been shown to be active *in vitro* against other organisms including—*D. pneumoniae*, *N. intracellularis*, *S. pyogenes*, *S. viridans* and *H. pertussis*, but clinical evidence must be further evaluated before 'CATHOMYCIN' can be recommended for these pathogens.

**ACTION**—'CATHOMYCIN' in optimum concentration is bactericidal. Cross-resistance with other antibiotics has not been observed.[7]

**TOLERANCE**—'CATHOMYCIN' is generally well tolerated by most patients.[5, 6, 8, 9, 10, 11]

**ABSORPTION**—'CATHOMYCIN' is readily absorbed[5, 6, 9] and oral dosage produces significant blood and tissue levels which persist for at least 12 hours.[7]

# 'CATHOMYCIN'

(Crystalline Sodium Novobiocin, Merck)

## SODIUM

**INDICATIONS**: Clinically 'CATHOMYCIN' has proved effective for cellulitis, carbuncles, skin abscesses, wounds, felons, paronychiae, varicose ulcer, pyogenic dermatoses, septicemia, bacteremia, pneumonia and enteritis due to *Staphylococcus* and infections caused by susceptible strains of *Proteus vulgaris* resistant to other antibiotics.[6, 7, 8, 9, 10, 11, 12, 13, 14]

Also, it is of particular value as an adjunct in surgery since staphylococcic infections seem prone to complicate post-operative courses.

**SUPPLIED**: 'CATHOMYCIN' Sodium (Crystalline Sodium Novobiocin, Merck) in capsules of 250 mg., bottles of 16.

'CATHOMYCIN' *is a trademark of Merck & Co., Inc.*

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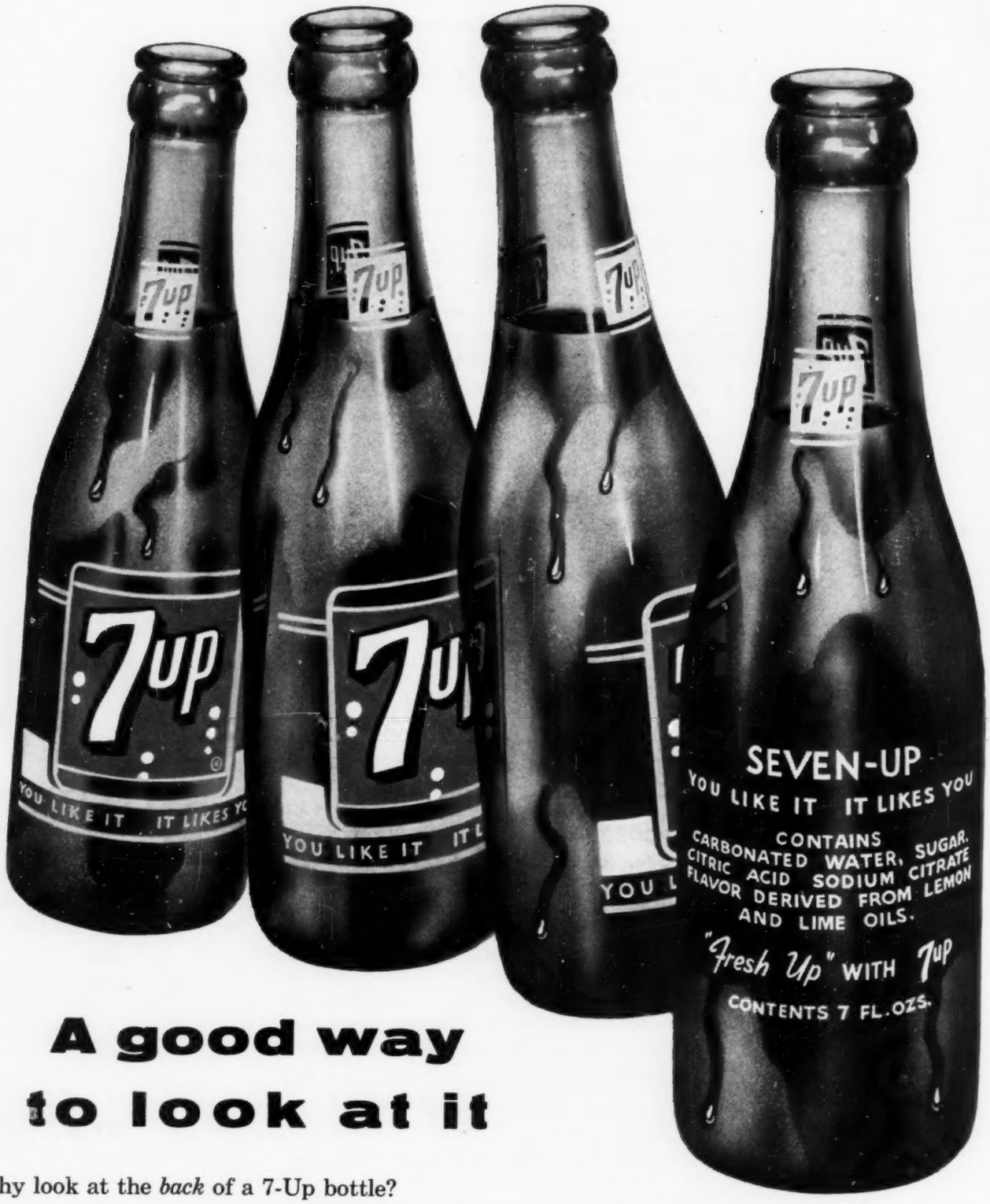
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YOU LIKE IT IT LIKES YOU
SEVEN-UP
YOU LIKE IT IT LIKES YOU
CONTAINS CARBONATED WATER, SUGAR, CITRIC ACID SODIUM CITRATE FLAVOR DERIVED FROM LEMON AND LIME OILS.
"Fresh Up" WITH 7up
CONTENTS 7 FL. OZS.

# A good way to look at it

Why look at the *back* of a 7-Up bottle?

Here's why. On the back of the bottle are listed all the ingredients of this sparkling, crystal-clear drink.

Such listing isn't *required*—but 7-Up is proud to do it. Proud to let you see what a pure and wholesome drink it is. Seven-Up is *so* pure and wholesome, folks of all ages may have it. Seven-Up is truly the *All-Family* Drink.

If you want a real thirst-quencher . . .
If you hanker for a cool, clean taste . . .
If you want a quick, refreshing lift . . .

**Nothing does it like Seven-Up!**

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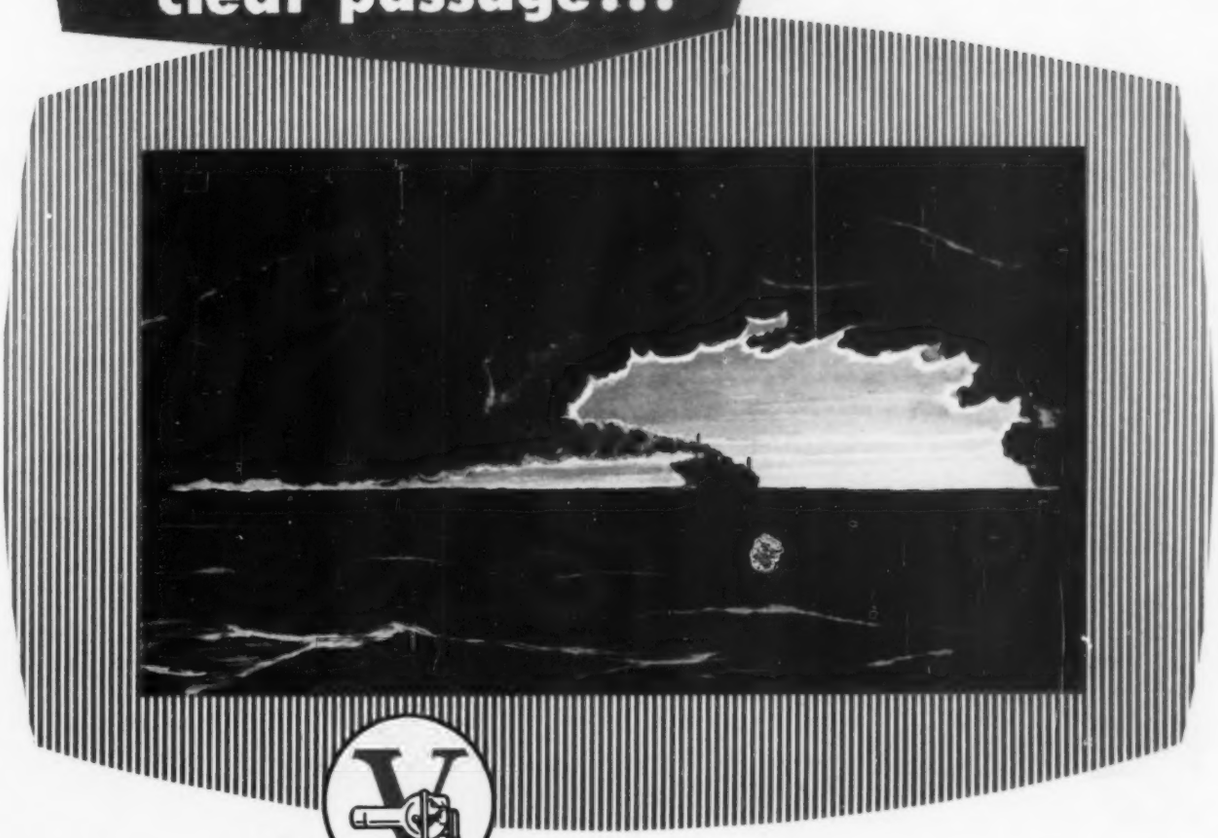

# Vaponefrin®*

Bronchaspasm as encountered in pulmonary emphysema, bronchiectasis or asthma demands a well tolerated [1, 2], effective [3, 4] and self-administered bronchodilator such as Vaponefrin.

To anticipate patient distress between office calls Vaponefrin solution offers pocket-size aerosol therapy at a minimal cost.

**VAPONEFRIN COMPANY • 304 SO. 69TH STREET • UPPER DARBY, PENNSYLVANIA**

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*Vaponefrin is a 2.25% solution of an especially purified racemic epinephrine, as hydrochloride, equivalent in pressor potency to approximately 1.25% U.S.P. reference standard epinephrine solution.

*Literature upon request*

# Exclusive crescent shape is important advantage of

# New Heinz Teething Biscuits for Babies

## Nutritive Analysis

(based on 100 grams)

| | |
|---|---|
| Calories | 373 |
| Total solids | 94.1 grams |
| Protein | 9.9 grams |
| Fat | 2.3 grams |
| Ash | 2.4 grams |
| Sugars; | |
| Sucrose | 30.83 grams |
| Natural reducing sugar, as Invert | 16.45 grams |
| Starch | 47.50 grams |
| Crude fiber | 1.2 grams |
| Calcium | 170.0 milligrams |
| Phosphorus | 310.0 milligrams |
| Iron | 7.1 milligrams |
| Sodium Chloride | .53 grams |
| Thiamine | .83 mgm |
| Riboflavin | 1.02 mgm |
| Niacin | 4.5 mgm |

- **Tiny hands** can securely hold these Heinz Teething Biscuits. Baby can grasp one curved end easily and maneuver the other to whatever spot in his mouth is giving him teething trouble.
- **Another advantage** is that the biscuit is firm and will not break or crumble. It's almost impossible for baby to get too much in his mouth at one time.
- **Ingredients** are wheat flour, eggs, whole wheat flour, brown sugar, salt, soy flour, honey, corn syrup, iron, defatted milk solids, wheat germ, niacin, dicalcium phosphate, baking soda, thiamine and riboflavin.
- **Heinz Teething Biscuits** are made to an 87-year-old quality tradition. You can recommend them with confidence.

# Heinz Baby Foods

**THEIR PREPARATION IS OUR MOST IMPORTANT TRUST**

57

***Over 70 Better-Tasting Kinds***

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# arlidin

**vasorelaxation**
**more tissue oxygen**
**improved muscle metabolism**
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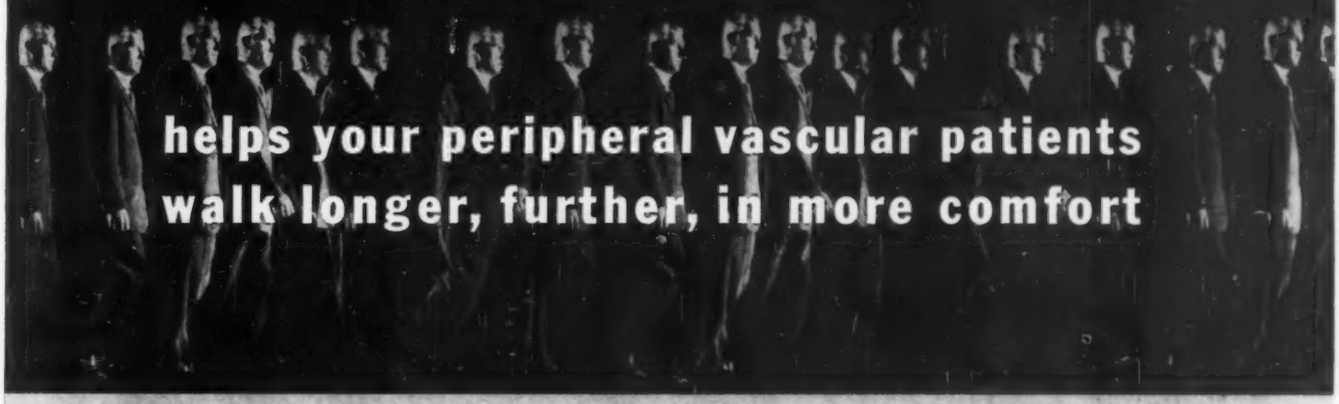

**helps your peripheral vascular patients walk longer, further, in more comfort**

**"strong muscle vasodilator activity and an adequate increase in cardiac output"[1]**

**effective "vasodilative agent of minimal toxicity and optimal tolerance"[2]**

**in intermittent claudication**
**diabetic vascular disease**
**Raynaud's disease**
**thromboangiitis obliterans**
**ischemic ulcers**

ARLIDIN dilates peripheral blood vessels in distressed muscles, relaxes spasm, increases both cardiac and peripheral blood flow . . . to send more blood where more blood is needed.

**dose:** 1 tablet t.i.d. or q.i.d.
bottles of 50, 100 and 1000

**arlidin*** HCl
brand of nylidrin hydrochloride
tablets **6 mg.**

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Upjohn
KALAMAZOO

Indicated
in most conditions
in which oral cortisone
or hydrocortisone is effective
Available in 1 mg. and 2.5 mg.
tablets in bottles of 100, and in 5 mg.
tablets in bottles of 30, 100, and 500
Usual dosage is ½ to 1 tablet three or four
times daily

Delta-Cortef*

*requires only 1/3 the dose of hydrocortisone*

*Trademark for the Upjohn brand of prednisolone (delta-1-hydrocortisone)

NEW!
Easy-to-take
Piperazate
eliminates pinworm
in one week,
roundworm in
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Piperazate™ Wafers
*piperazine phosphate*, Leeming, 500 mg.

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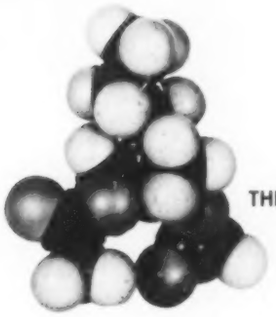

THE MILTOWN MOLECULE

# A tranquilizer well suited for prolonged therapy

# NO ORGANIC CONTRAINDICATIONS

## reported to date

- well tolerated, non-addictive, essentially non-toxic
- no blood dyscrasias, liver toxicity, Parkinson-like syndrome or nasal stuffiness
- chemically unrelated to chlorpromazine or reserpine
- does not produce significant depression
- orally effective within 30 minutes for a period of 6 hours

**Indications: anxiety and tension states, muscle spasm.**

# Miltown®

**THE ORIGINAL MEPROBAMATE**

DISCOVERED AND INTRODUCED by Wallace Laboratories, New Brunswick, N. J.

2-methyl-2-*n*-propyl-1,3-propanediol dicarbamate—U. S. Patent 2,724,720

SUPPLIED: 400 mg. scored tablets. Usual dose: 1 or 2 tablets t.i.d.

*Literature and Samples Available on Request*

# Reports of Clinical Studies

1. "I have used meprobamate in my general psychiatric practice since April, 1955, and believe it to be [a] drug of choice for relief of tension, anxiety and insomnia."

*Lemere, F.: Northwest Med.* **54:** *1098, 1955.*

2. ". . . the patient [taking Miltown] never describes himself as feeling detached or 'insulated' by the drug. He remains completely in control of his faculties, both mental and physical, and his responsiveness to other persons is characteristically improved."

*Sokoloff, O. J.: A.M.A. Arch. Dermat. In press.*

3. "Of special importance is the fact that Miltown does not appear to affect autonomic balance—which in alcoholics is often unstable . . ."

*Thimann, J. and Gauthier, J. W.: Quart. J. Stud. Alcohol.* **17:** *19, 1956.*

4. "The [relative] absence of toxicity, both subjectively and objectively, is an important feature in favor of Miltown. In addition, there were no withdrawal phenomena noted on cessation of therapy, whether it was withdrawn rapidly or slowly."

*Borrus, J. C.: J.A.M.A.* **157:** *1596, 1955.*

5. "Miltown is of most value in the so-called anxiety neurosis syndrome, especially when the primary symptom is tension . . . Miltown is an effective dormifacient and appears to have . . . advantages over the conventional sedatives except in psychotic patients. It relaxes the patient for natural sleep rather than forcing sleep."

*Selling, L. S.: J.A.M.A.* **157:** *1594, 1955.*

# Miltown®

**THE ORIGINAL MEPROBAMATE**

DISCOVERED AND INTRODUCED by Wallace Laboratories, New Brunswick, N. J.

for maximum hypodermic service

B-D MULTIFIT® SYRINGES

**increased assembly speed**
every plunger fits every barrel.

**less breakage**
unground barrels are tougher, stronger, more resistant.

**fewer replacements**
in case of breakage, unbroken part remains serviceable.

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**sharp points**
for easier penetration of tissue.

**side beveling**
inhibits seepage and afterpain.

**rustless throughout**
made of Hyperchrome® stainless steel.

BECTON, DICKINSON AND COMPANY
RUTHERFORD, N. J.

B-D

that the epileptic patient

may enjoy fuller life

# DILANTIN® SODIUM

(diphenylhydantoin sodium, Parke-Davis)

For patients with grand mal and psychomotor seizures,

DILANTIN – alone or in combination – continues as an anticonvulsant of choice. Effective control of seizures, with resulting greater social acceptance and increased vocational opportunities, forecasts a fuller life for such patients. DILANTIN has little or no hypnotic effect.

DILANTIN Sodium is supplied in a variety of forms – including Kapseals® of 0.03 Gm. (½ gr.) and 0.1 Gm. (1½ gr.) in bottles of 100 and 1,000.

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# In Congestive Heart Failure
# $R_x$ 'Wide Safety Margin'
# GITALIGIN®

WHITE'S BRAND OF AMORPHOUS GITALIN

**Authoritative investigators have reported that the digitalizing dose of Gitaligin is approximately one-third the toxic dose.**[1-5]

This "wide margin of safety" (difference between therapeutic and toxic doses) permits rapid digitalization and successful maintenance with a minimum of toxic side reactions—even in refractory cases where other glycosides have failed.[6] And, cost to your patient is no greater than ordinary digitalis preparations.

Supplied: Scored tablets of 0.5 mg. Bottles of 30 and 100.

References: 1. Ehrlich, J. C.: Arizona Med. *12:* 239 (June) 1955. 2. Weiss, A., and Steigmann, F.: Am. J. M. Sc. *227:* 188 (Feb.) 1954. 3. Dimitroff, S. P.; Griffith, G. C.; Thorner, M. C., and Walker, J.: Ann. Int. Med. *39:* 1189 (Dec.) 1953. 4. Hejtmancik, M. R., and Herrmann, G. R.: Texas St. J. M. *51:* 238 (May) 1955. 5. Batterman, R. C.; DeGraff, A. C., and Rose, O. A.: Circulation *5:* 201 (Feb.) 1952. 6. Denham, R. M.: J. Kentucky St. M. Assoc. *53:* 209 (Mar.) 1955.

It's so easy to switch to 'wide safety margin' Gitaligin. Follow these simple dosage equivalents wherever digitalis therapy is indicated:

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|---|---|---|
| Digitalis leaf | 0.1 Gm. | 0.5 mg. |
| Digitoxin | 0.1 mg. | 0.5 mg. |
| Digoxin | 0.5 mg. | 0.5 mg. |

WHITE LABORATORIES, INC. Kenilworth, N. J.

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## For improved bowel motility and soft, formed stools

Senokot is a specific large bowel neuroperistaltic that achieves controlled reflex evacuation of the constipated bowel and rehabilitation of the constipated patient.* A new, effective combination of senna pod principles, Senokot is doubly standardized for potency and reproducible effect. It is particularly valuable for treating constipation in the pregnant and postpartum patient, in children, and in the aged.

*When regular bowel function is restored, dosage may be reduced and eventually discontinued.

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SUPPLY: Cocoa-flavored GRANULES in 8 and 4 ounce containers. Unflavored TABLETS in bottles of 100.

*Clinical supplies and literature available on request from the Purdue Frederick Company.*

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brand of standardized concentrated active senna pod principles

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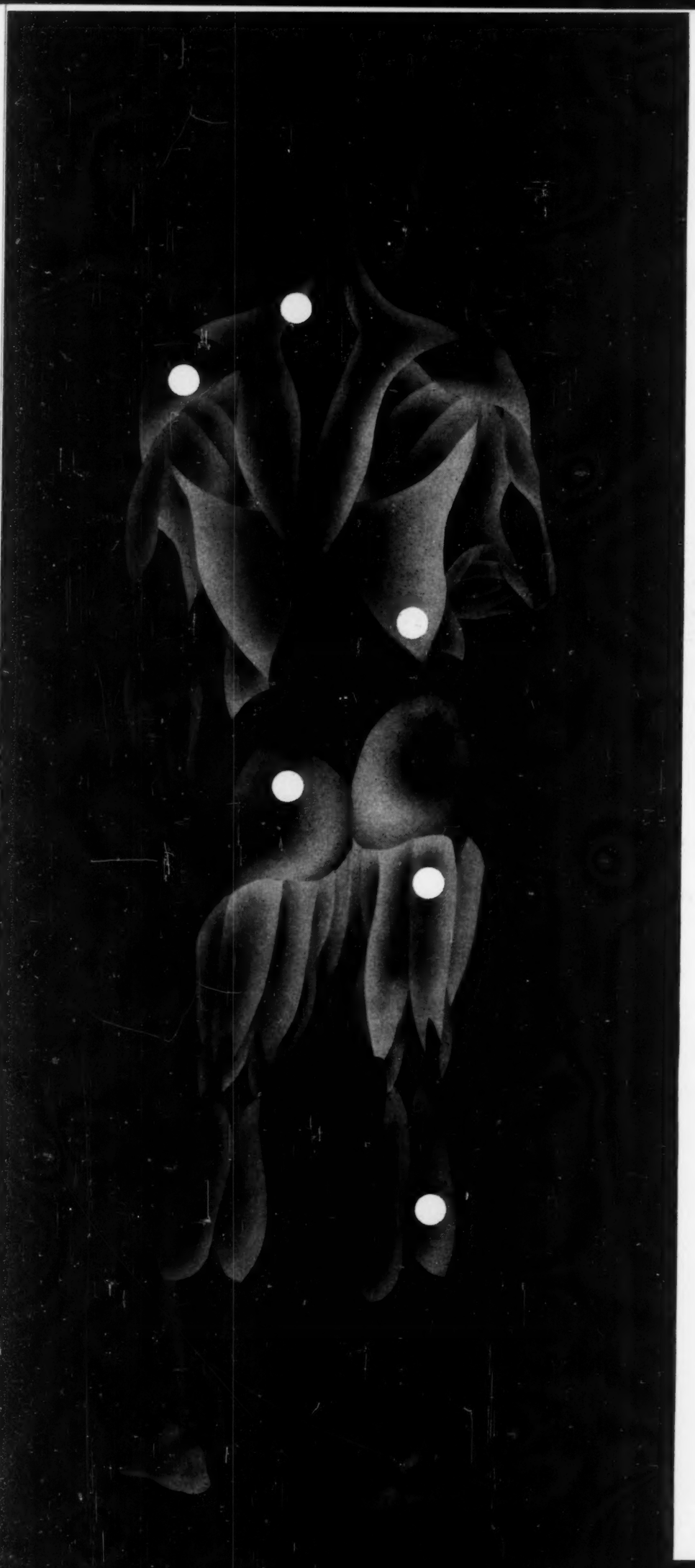

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(Zoxazolamine,† McNeil)

## orally effective muscle relaxant

### wide margin of safety:

"No irreversible side-effects occurred."[1]

### well-tolerated:

"The toxic reactions for the most part were easily controlled...."[1]

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"This preliminary report of 100 patients indicates an 85% over-all effectiveness."[1]

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1. Smith, R. T.; Kron, K. M.; Peak, W. P., and Hermann, I. F.: J.A.M.A. 160:745 (Mar. 3) 1956.

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†U.S. Patent Pending

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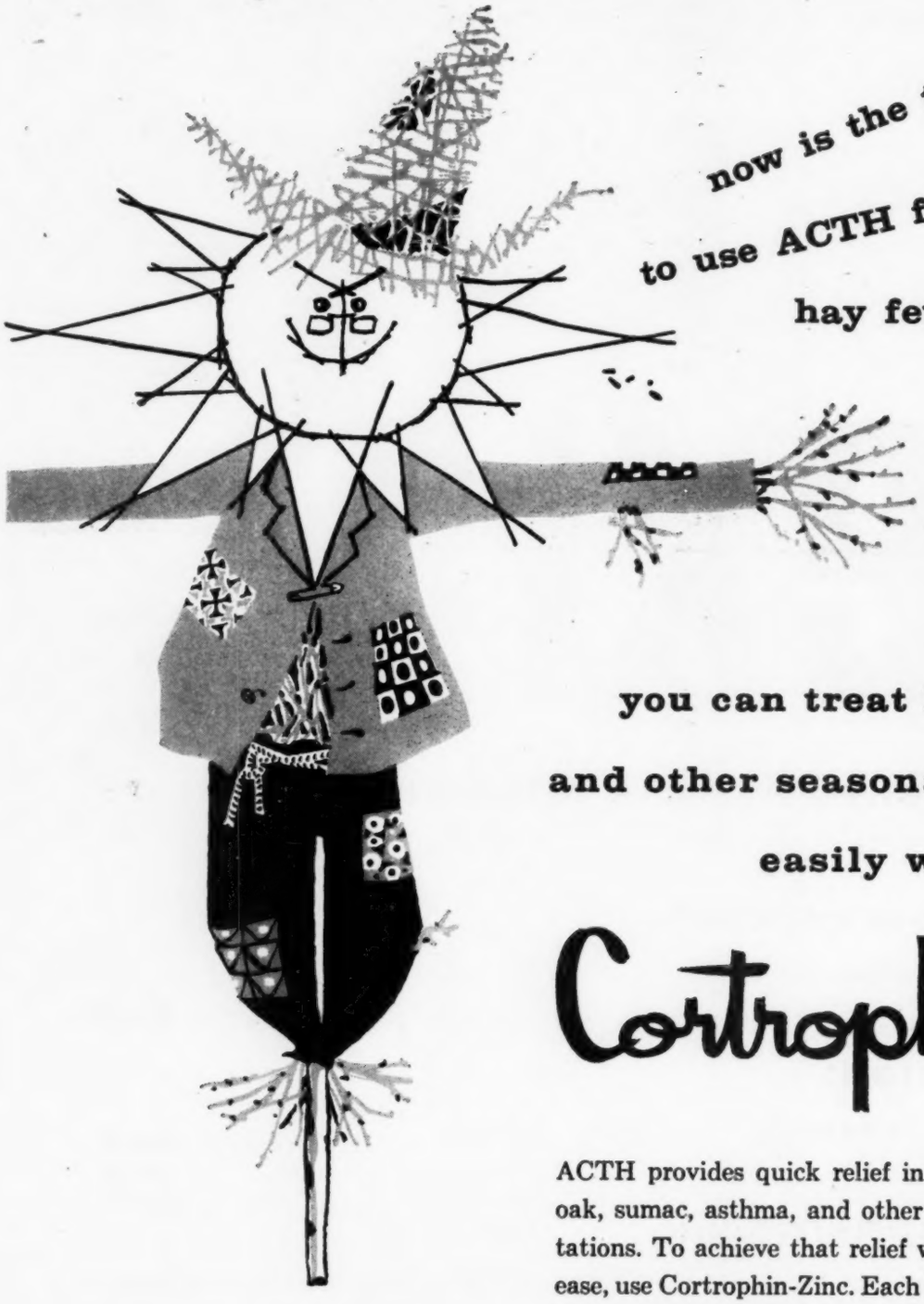

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**to use ACTH for your**

**hay fever sufferers**

**you can treat HAY FEVER**

**and other seasonal allergies**

**easily with**

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ACTH provides quick relief in hay fever, poison ivy, poison oak, sumac, asthma, and other summertime allergic manifestations. To achieve that relief with maximal convenience and ease, use Cortrophin-Zinc. Each injection lasts at least 24 hours in the most acute cases to 48 and even 72 hours in milder cases, meaning fewer injections and less total ACTH dosage. And Cortrophin-Zinc is easy to use, since it is an aqueous suspension which requires no preheating and flows easily through a 24-26 gauge needle.

*Supplied in 5-cc vials, each cc containing 40 U.S.P. units of corticotropin adsorbed on zinc hydroxide (2.0 mg zinc/cc).*

* T.M. – Cortrophin

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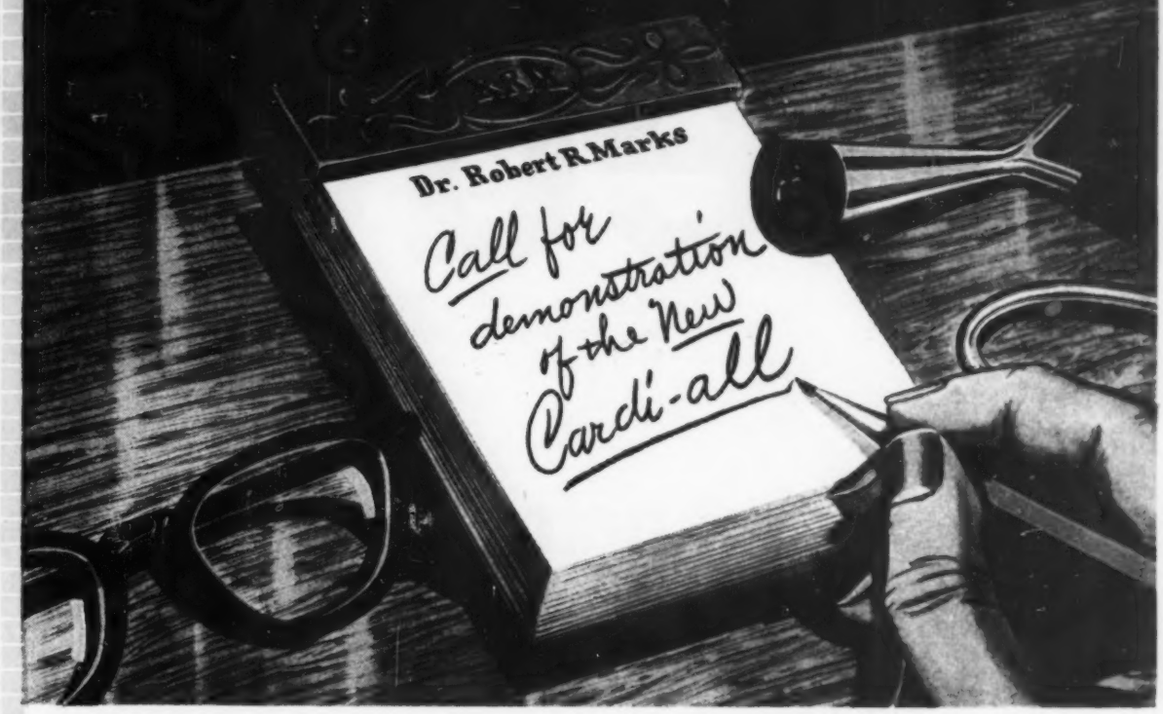


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**in acute and chronic pyelonephritis, cystitis and prostatitis**

# freedom

## from pain,

## from infection,

## from resistant mutants

*"In the majority of cases, nitrofurantoin [Furadantin] was effective clinically, with a pronounced improvement, indicated by the appearance of the urine as well as by verbal commendation by the patient, within 24 to 36 hours."*[1]

**Freedom from pain**—Successful treatment of urinary tract infections must (1) alleviate discomfort and (2) eradicate infection. With Furadantin, both purposes are accomplished simultaneously and quickly.

"Frequently, patients reported symptomatic improvement within 24 hours of the beginning of treatment."[2]

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"Therapeutic action was rapid, within 8 to 36 hours."[1]

**Freedom from infection and resistant mutants**—With Furadantin, relief of symptoms is a function of its rapid antibacterial action.

**Comparative Sensitivity to Furadantin of Infectious Microorganisms Isolated over a Two-Year Period[4]**

| Microorganism | Total no. strains | Sensitive* | | Moderately sensitive* | | Resistant* | |
|---|---|---|---|---|---|---|---|
| | | No | Per cent of total | No. | Per cent of total | No. | Per cent of total |
| Proteus vulgaris | 237 | 209 | 88.2 | 28 | 11.8 | 0 | 0 |
| Escherichia coli (including paracolon bacillus) | 281 | 255 | 92.7 | 23 | 8.2 | 3 | 1.1 |
| Aerobacter aerogenes | 223 | 183 | 82.1 | 40 | 17.9 | 0 | 0 |
| Streptococcus faecalis | 160 | 155 | 96.7 | 5 | 3.1 | 0 | 0 |
| Pseudomonas aeruginosa | 101 | 5 | 5.0 | 40 | 39.9 | 56 | 55.4 |
| Micrococcus pyogenes var. aureus | 6 | 6 | 100 | 0 | 0 | 0 | 0 |
| Klebsiella pneumoniae | 3 | 3 | 100 | 0 | 0 | 0 | 0 |
| Alcaligenes faecalis | 2 | 2 | 100 | 0 | 0 | 0 | 0 |

*Organisms inhibited by 100 µg./ml. or less are classified as sensitive, by 200 to 400 µg./ml. as moderately sensitive, and those not inhibited by 400 µg./ml. as resistant.

"*The status of P. vulgaris and of M. pyogenes var. aureus is especially noteworthy in the light of the high degree of resistance exhibited by these organisms to antibiotics currently employed.*"[4]

*Furadantin "may be unique as a wide-spectrum antimicrobial agent that . . . does not invoke resistant mutants.*"[5]

REFERENCES: 1. Stewart, B. L., and Rowe, H. J.: J. Am. M. Ass. 160:1221, 1956. 2. Trafton, H. M., et al.: N. England J. M. 252: 383, 1955. 3. Abrams, M., and Prophete, B.: Missouri Med. 51:280, 1954. 4. Schneierson, S. S.: Antibiotics 3:212, 1956. 5. Weisbren, B. A., and Crowley, W.: A. M. A. Arch. Int. M. 95:653, 1955

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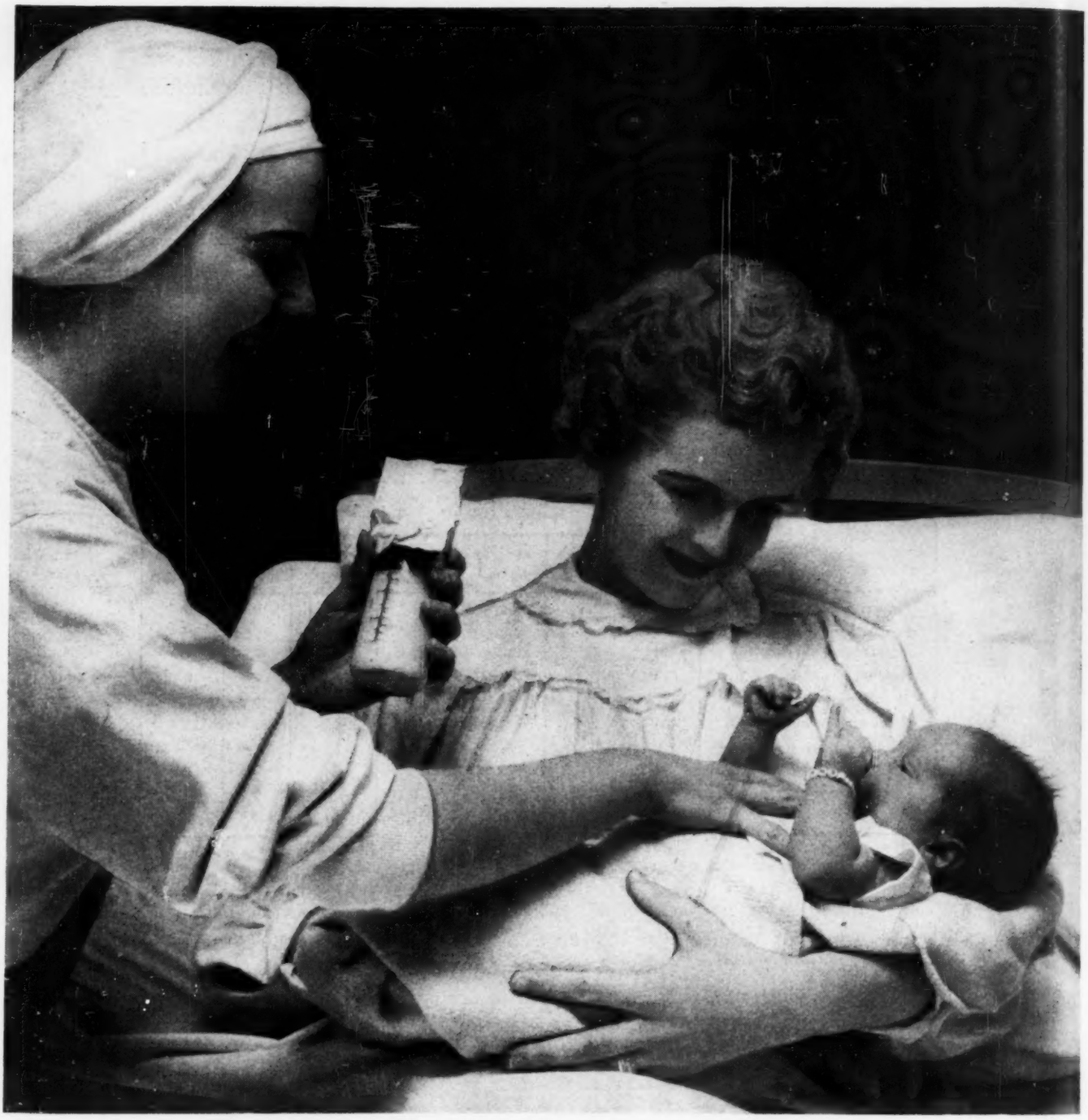
**a new class of antimicrobials—neither antibiotics nor sulfonamides**



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The high caloric requirements of infants, coupled with the fact that they have little ability to digest starchy food, are indications for the use of an easily digested carbohydrate milk modifier.

Karo places a minimum demand upon the digestive system during the first weeks of life. Even premature babies thrive on Karo because this easily digested, completely utilized, fluid mixture of dextrins, maltose and dextrose does not induce flatulence, colic, fermentation or allergy.

Karo permits easy adjustment of formula to meet the accelerated nutritional demand during the early months of rapid growth. Mothers will appreciate the ease of making formulas containing Karo, plus its ready availability and economy. Light or dark Karo syrup may be used interchangeably with cow's milk or evaporated milk and water. Each ounce yields 120 calories.

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## when anxiety is complicated by **depression . . .**

In many patients, mental and emotional distress is a complex in which anxiety and depression coexist and reinforce each other. In these patients, 'Thora-Dex' is of unusual value. The 'Thorazine' component of 'Thora-Dex' relieves anxiety and tension; the 'Dexedrine' component relieves depression.

# THORA-DEX*

*a combination of Thorazine† and Dexedrine‡*

'Thora-Dex' Tablets are available in two strengths:

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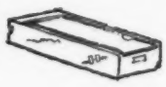
|---|---|
| 10 mg. of 'Thorazine' | 25 mg. of 'Thorazine' |
| plus | plus |
| 2 mg. of 'Dexedrine' | 5 mg. of 'Dexedrine' |

'Thora-Dex' should be administered discriminately and, before prescribing, the physician should be fully conversant with the available literature.

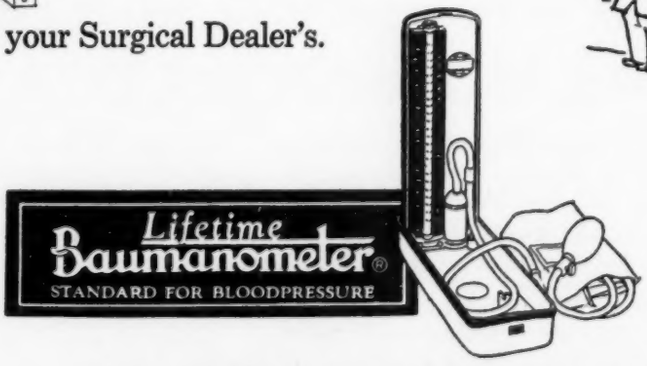
*Smith, Kline & French Laboratories, Philadelphia*

*Trademark †T.M. Reg. U.S. Pat. Off. for chlorpromazine, S.K.F.
‡T.M. Reg. U.S. Pat. Off. for dextro-amphetamine sulfate, S.K.F.

# THE AUTOBIOGRAPHY OF A KOMPAK BAUMANOMETER

I'm a real old-timer. Dr. Carl bought me 27 years ago. I have gone with him on house calls in all kinds of weather. I well remember one of our Nevada blizzards when his old Ford got stuck in a snow drift. He still uses me many times a day in his office. My case  is somewhat battered. He could get a shiny new KOMPAK, but he tells me, "Those are honorable scars. *And you are a* *mercury-gravity instrument, and the gravity principle never changes.* I know the measurements you give me are accurate all along the scale. I'm never going to give you up." He says I'm a darned convenient instrument to have, and he sure got his money's worth when he bought me. Do you own a Baumanometer? If not—

why not get a nice new one at your Surgical Dealer's.

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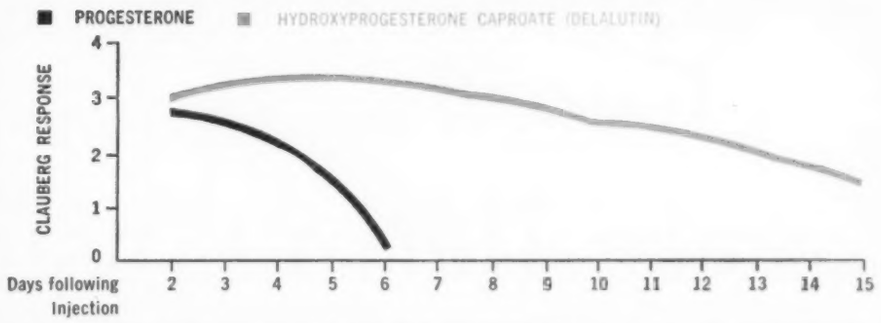
**Comparative effect of single subcutaneous injection of Delalutin and progesterone on the progestational changes (Clauberg Test) in the rabbit uterus**




**useful in preventing abortion, habitual and threatened, due to progesterone inadequacy and in restoring the manifestations of normal ovarian function in nonpregnant women.**

**Vials of 2 and 10 cc. Each cc. provides 125 mg. of hydroxyprogesterone caproate.**

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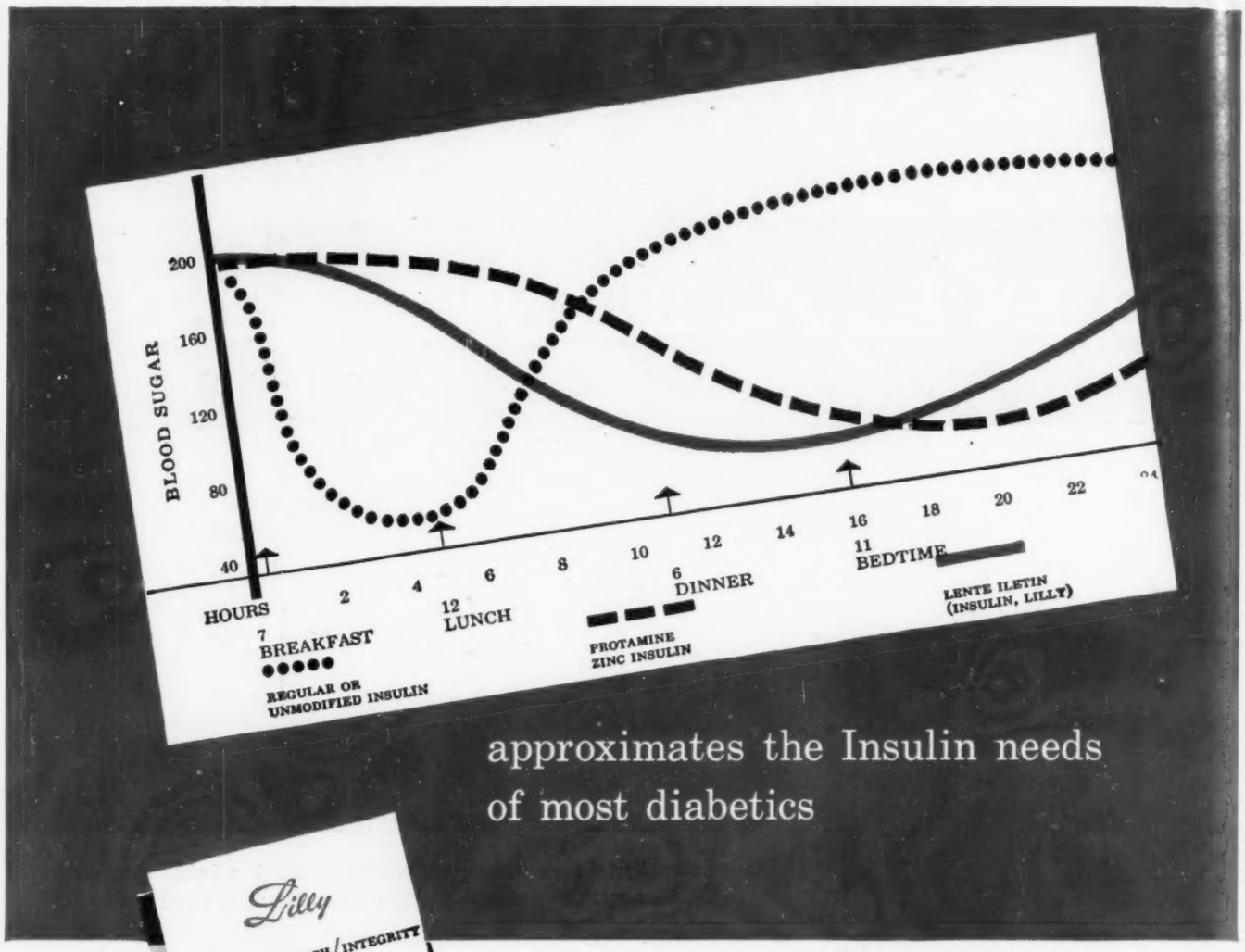


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Yet when dietary and antacid measures were supplemented by "intensive" treatment with Pro-Banthīne, the mean duration of treatment was reduced from 135 days to 17 days and the incidence of "good results"—measured both clinically and roentgenographically—rose from 31 to 88 per cent.

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Pro-Banthīne is supplied in tablets of 15 mg. each; in tablets of 15 mg. with 15 mg. of phenobarbital; and, for parenteral use, in ampuls of 30 mg.

G. D. Searle & Co., Chicago 80, Illinois, Research in the Service of Medicine.


1. Dragstedt, L. R., and Others: Ann. Surg. *126:* 687 (Nov.) 1947.
2. Stempien, S. J., and Others: Part I Gastroenterology *23:*45 (Jan.) 1953; Part II. Gastroenterology *23:*55 (Jan.) 1953.
3. Hightower, N. C., Jr., and Gambill, E. E.: Gastroenterology *23:*244 (Feb.) 1953.
4. Barowsky, H.; Schwartz, S. A., and Lister, J.: Am. J. Gastroenterol. *24:*533 (Nov.) 1955.
5. Krantz, J. C., Jr.: Am. J. Gastroenterol. *24:*31 (July) 1955.


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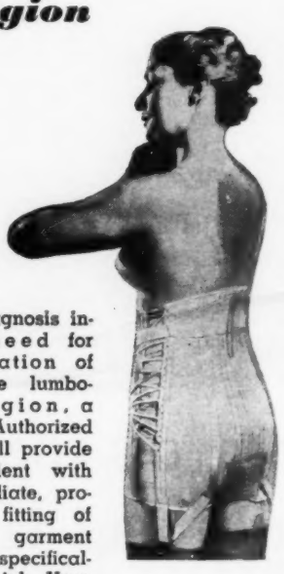

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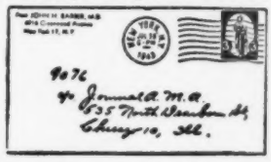


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**Journal A.M.A., 535 N. Dearborn St., Chicago 10**

### PHYSICIANS WANTED

STAFF PHYSICIAN AND/OR CHIEF, PHYSICAL medicine rehabilitation service—for 250 bed tuberculosis hospital+, 25 miles to Kansas City via 4-lane highway; affiliated with University of Kansas Medical School; starting salaries range from $5915 to $11,610 annually, depending on qualifications; experience and Board certification in tuberculosis desired but not required; citizenship required; housekeeping quarters available at reasonable rental. Write: Manager, Veterans Administration Hospital, Excelsior Springs, Missouri. C

WANTED — OBSTETRICIAN-GYNECOLOGIST; MUST be young male; well-trained, Board certified or Board eligible; interested in a full-time salaried appointment as associate on OB-GYN staff of 300 bed general hospital*+ and large new clinic building. Write to: R. E. Nicodemus, MD, Geisinger Memorial Hospital, and Foss Clinic, Danville, Pennsylvania. C

WANTED—PHYSICIAN; GRADUATE OF APPROVED medical school with psychiatric training or experience; for State mental hospital in Pacific Northwest; salary range $6840 to $8700 plus family maintenance including attractive house; sick leave, paid vacation and retirement plan; easy access to varied scenic and recreation areas. Box 1919 C, % AMA.

WANTED—PSYCHIATRIST; TO SERVE AS CLINICAL director State Hospital+ Ohio; U. S. citizenship and eligibility Ohio license required; Board in psychiatry required; salary attractive; new house available nominal rent; excellent schools, churches and shopping facilities. Write: Superintendent, State Hospital, Massillon, Ohio. C

WANTED—YOUNG GENERAL PRACTITIONER; TO join family medicine section of 4 man clinic, 30 miles Southwest Chicago; will rotate house calls, evenings, and weekends; attractive starting salary, with periodic raises; early partnership available if mutually satisfactory. Write: Clinic Manager, Hedges Clinic, Frankfort, Illinois. C

*(Continued on page 76)*

PARKINSONISM

# Artane*

HYDROCHLORIDE

Trihexyphenidyl HCl *Lederle*

## effective over long periods

ARTANE is a strong antispasmodic, effective in all three types of Parkinsonism—Postencephalitic, Arteriosclerotic, and Idiopathic. Unlike certain other such drugs, it does not lose effectiveness when given over long periods. It is usually well tolerated, and has no deleterious effect on bone marrow function.

ARTANE is supplied in 2 mg. and 5 mg. tablets, and as an elixir containing 2 mg. per teaspoonful (4 cc.) Dosage: 1 mg. the first day, gradually increased, according to response, to 6 mg. to 10 mg. daily.

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*long-lasting*

...Echo in miniature of a once dominant line, the Rock Iguana **(Cyclura stejnegeri)** traces its ancestry straight back to the Eocene, some 75,000,000 years ago, is now limited to a small population on Mona Island, W. I.

TITRALAC®

***unique antacid—with milk-like action***

Each tablet (0.50 Gm.) contains 0.15 Gm. glycine and 0.35 Gm. calcium carbonate.

**acts *within minutes*... lasts *for hours*...**

**deliciously acceptable *month after month!***

also TITRALAC LIQUID—one teaspoonful (5cc.) is the equivalent of two TITRALAC tablets.

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Schenlabs

## TONICS AND SEDATIVES

### *my favorite story*

*In this space will be published anecdotes submitted by physicians concerning their practice or people in general. Contributions for "My Favorite Story" are welcome.*

This story concerns the blackest days of the Second World War. At that low point of the fortune of the Allies it is said that Mr. Churchill and the King had a serious discussion with an American banker.

"London is being raided nightly," the King said. "Rommel may capture the Suez; Japan menaces Australia. What should we do?"

The banker considered the question seriously and then suggested, "Your Majesty, if I were you, I'd put Canada in the Queen's name."

A young man attending M.I.T. came home from school at the end of the semester and told his father that his class was trying to find a universal solvent.

"What's that?" asked his father.

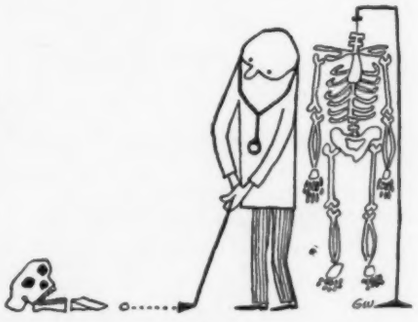
"It's a liquid that will dissolve everything," explained the son.

"Good idea," nodded the father. "But, when you find it, what are you going to keep it in?"

An English guide was showing Kenilworth Castle to some soldiers from the Bronx.

"For hundreds of years," he proclaimed, "not a stone from this edifice has been touched, not a single thing has been repaired."

"Say," observed one of the tourists, "we must have the same landlord."



The gentleman was intrigued by the advertisement of a canary that could sing every song in the world. The bird lived up to all its advance notices. On request he warbled an aria by Bach, "Rule Britannia," and "Sweet Sue."

"How much?" asked the gentleman.

"Two hundred dollars," said the proprietor, "and you will have to buy the other bird with it."

"The two hundred is steep enough," complained the prospective buyer, "Why must I buy this other bird as well?"

"The canary needs him," said the proprietor. "That's his arranger."

*(Continued on page 72)*

## How just one 'Teldrin' Spansule capsule can help your hay-fever patient "sleep like a log"

A single 'Teldrin' *Spansule* capsule taken at bedtime provides *night-long* antihistaminic protection against sleep-hindering nasal stuffiness, sneezing and itching eyes. (Another 'Teldrin' *Spansule* capsule taken on arising helps your patient keep ahead of his hay fever *all day long*.)

This is because Teldrin's unique *sustained release* oral dosage form immediately releases an optimum initial dose of one of "the most effective of all antihistamines,"[1] chlorprophenpyridamine maleate —then releases a continuous trickle of medication providing an uninterrupted 10 to 12 hour therapeutic effect.

1. Margolin, S., and Tislow, R.: Ann. Allergy *8*:515

**TELDRIN***
chlorprophenpyridamine maleate

**SPANSULE***
sustained release capsules, S.K.F.

ANTIHISTAMINE

12 mg. 8 mg.

made only by

*Smith, Kline & French Laboratories, Philadelphia*

first in sustained release oral medication

*T.M. Reg. U.S. Pat. Off. Patent Applied For.

*home...*

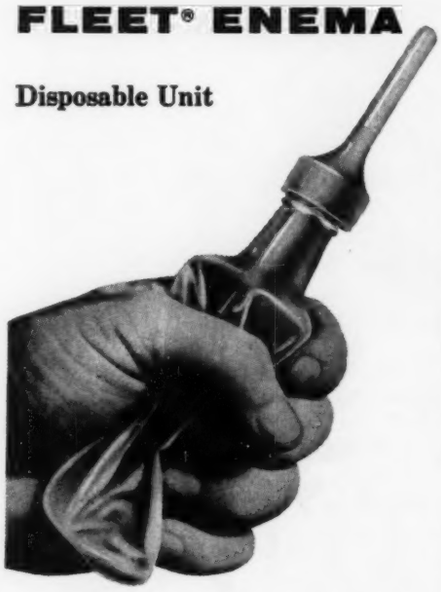
*office...*

*and hospital...*

***whenever an enema is indicated***

**FLEET® ENEMA**

**Disposable Unit**



**Anatomically correct rectal tube minimizes injury hazard...plastic squeeze bottle fits the hand, simplifies instillation . . . effective as soap suds, or more so,(1) FLEET ENEMA induces prompt, spasm-free evacuation.(2)**

**For home administration and for hospitalized patients prescribe or recommend FLEET ENEMA Disposable Unit . . . extremely effective, too, for pre-examination cleansing in your office . . . available at all pharmacies . . . in use by leading hospitals.**

**Each 4½ fl. oz. unit contains, per 100 cc., 16 mg. sodium biphosphate and 6 gm. sodium phosphate.**

**(1) Swinton, N. W., Surg. Clin. of No. Am. 35:833, 1955**

**(2) Cross, J. M., Jl. Int. Coll. Surg. 23:24, 1955**

**C. B. FLEET CO., INC.**

**Lynchburg, Virginia**

Makers of Phospho®-Soda (Fleet)
Gentle . . . Prompt . . . Thorough


**TONICS AND SEDATIVES** *(Continued)*

A topnotch salesman in the garment area of New York City presented himself to a foot specialist on Park Avenue. The ceaseless pounding of the pavement had affected his feet, and he wanted help.

The specialist reassured him. "There's nothing wrong with your feet," he said. "I think you will be all right if you bathe them twice a day in salt water for a couple of weeks."

The salesman promptly departed for Atlantic City and secured a room at a hotel some three miles from the beach. The morning after his arrival, he went down to the boardwalk, bought a big tin pail, and then asked a lifeguard nearby: "Would it be all right if I took a pailful of your salt water?"

"Sure," said the lifeguard, "but it will cost you a quarter." The salesman produced the money, filled his pail with water, lugged it back to the hotel, and took his foot bath.

Later that afternoon he reappeared at the beach with his empty pail. By this time the tide had gone out. The beach was fully 100 yards deeper than it had been in the morning.

The salesman looked in wonder. "Has that fellow done a business today!" he murmured.

♠

## *quotes of the week*

"A husband is a sweetheart after the nerve has been killed."

♠

"Golf is a game where a little white pill is chased by a lot of people too old to chase anything else."

♠

One wire-haired terrier said to another, "Heard from your beau lately?"

"Yes," was the reply, "I had a litter from him Tuesday."

♠

♠

A well-known epicure sometimes drinks as many as eight varieties of wine with a full course dinner.

A friend once said, "I should think you would be afraid of so many different wines at one meal."

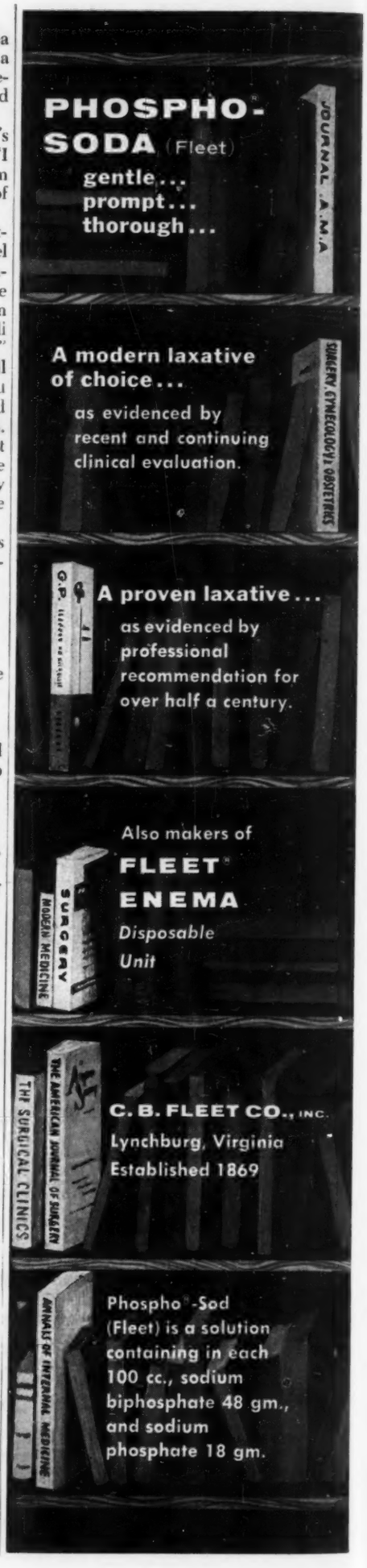
"I'm not," was the answer. "It's only the indifferent wines I'm afraid of."

♠

A lady at the Bronx Zoo inquired about gnus. She asked the keeper: "Are they vicious? Do they bite?"

"Lady," said the keeper, "no gnus is good gnus."

*(Continued on page 74)*



PHOSPHO-SODA (Fleet)
gentle...
prompt...
thorough...
JOURNAL A.M.A.
A modern laxative of choice...
as evidenced by recent and continuing clinical evaluation.
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A proven laxative...
as evidenced by professional recommendation for over half a century.
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Established 1869
ANNALS OF INTERNAL MEDICINE
Phospho-Soda (Fleet) is a solution containing in each 100 cc., sodium biphosphate 48 gm., and sodium phosphate 18 gm.

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250 West 57th Street
New York 19, N. Y.

TONICS AND SEDATIVES *(Continued)*

"Modesty has ruined more kidneys than bad liquor."

♣

### *did you know that? . . .*

Did you know that the position of the geisha girl in Japanese society is a highly honorable one? Geisha means "accomplished one." This calling is ancient and has much prestige. Only girls between 15 and 21 years of age are allowed to become geisha girls. They are paid and paid well to be entertaining and amusing at parties. To sing, to dance, to converse, to make tea gracefully, and to serve Saki is her vocation.

For the Japanese, she takes the place of chorus girls and night club hostesses, but she is far superior to them in education, training, and culture.

While on the subject of the Japanese, it is pertinent to note that Japan's musical show program usually contain the names, addresses, and telephone numbers of every girl in the chorus.

♣

### *zany stories*

There is a certain type of humor that relies on its complete ridiculousness for a laugh. This type of anecdote is well liked around the world.

A soldier of fortune joined the foreign legion, and, to toughen him up, his commanding officer sent him on a 200-mile solo trek through the Sahara desert. The fourth day out the soldier of fortune spied a wooden tower in the distance. For a while he thought it was a mirage. As he drew close, he saw that it was real. On top of the tower sat a gentleman. He was dressed in a striped bathing suit with the word Lifeguard written on it.

The astonished soldier asked, "What are you doing lifeguarding in the middle of the Sahara? Don't you know it's at least a thousand miles to the nearest water?"

"Sure I know," said the Lifeguard. "But isn't this a wonderful beach?"

—D. D.

WORK WITH LESS TENSION

The Harter 66 helps ease stress and tension. Precise handwheel controls fit this chair to *your* body. Deep, molded foam rubber seat is gently rounded to avoid irritating and harmful pressure under your knees. Have a 66 fitted to you and start feeling "alive" at the end of the day.

Write for free book, "Posture Seating Makes Sense." We'll send name of your nearest Harter dealer.

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STURGIS, MICHIGAN

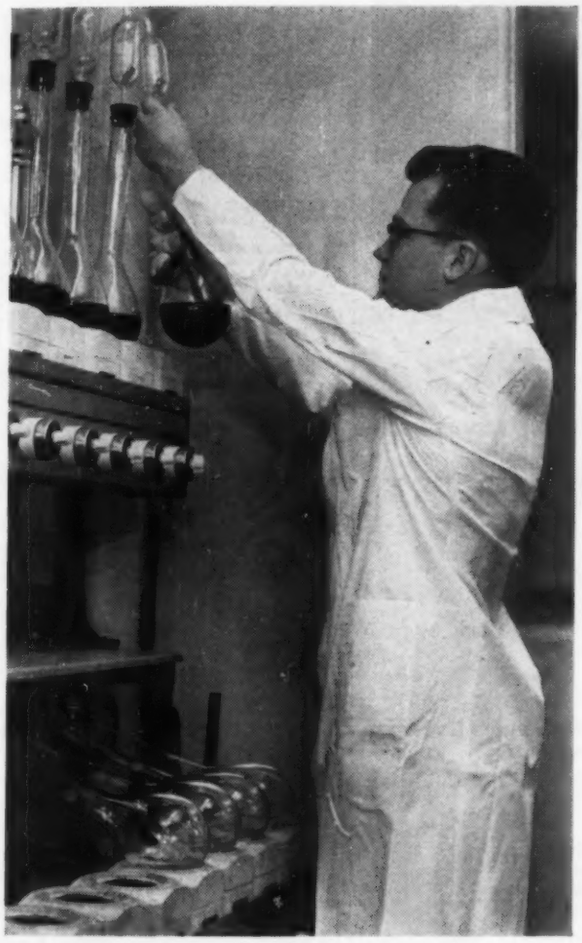
BUY
U. S. SAVINGS
BONDS

*"Is the doctor in?"*

# Report from Carnation Research Laboratory

*Van Nuys, California*

**Current Research:**
**Carnation Evaporated Milk**



**Protein Supplementation**

A subject of current interest to the Medical profession, amino acid supplementation, is under study. The possible value of such supplementation of Carnation Evaporated Milk at various levels and under varying processes is checked through a continuing availability study using the Repletion Method of determining protein quality.

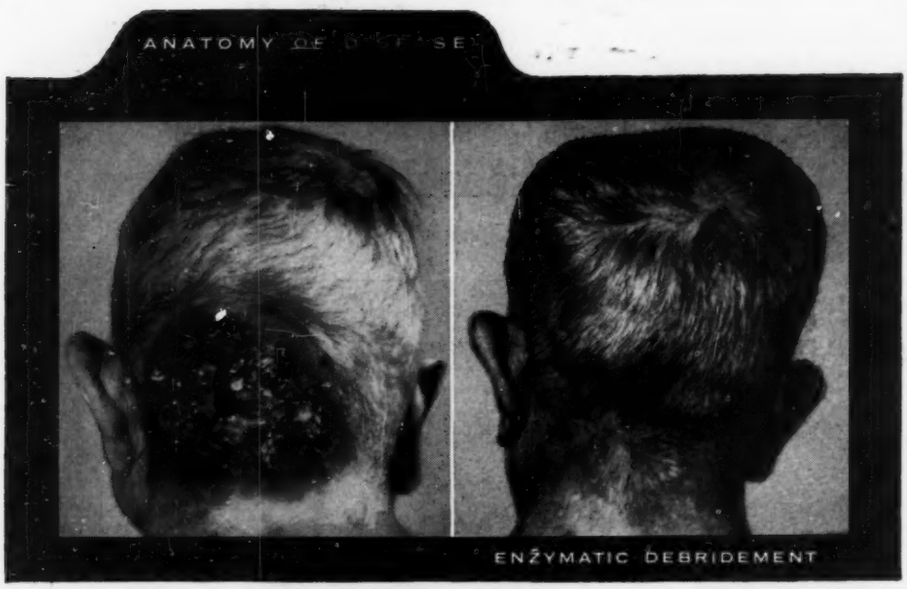
**Vitamins $B_1$, $B_6$, $B_{12}$**

One of the most important projects of current Carnation general research is concerned with vitamins $B_1$, $B_6$, and $B_{12}$: their role in nutrition; possible levels of supplementation; availability (chemical and biochemical research); stability throughout processing and stability under long term storage.

**CARNATION PROTECTS YOUR RECOMMENDATION WITH CONTINUOUS 5-PHASE RESEARCH:**

*Carnation Research Laboratory,*
*Carnation Farms,*
*Carnation Plant Laboratories,*
*Carnation Central Product Control Laboratory,*
*Carnation-sponsored University and Association Research.*

*"from Contented Cows"*

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- Liquefies viscous pus, permitting more efficient use of antibiotics and easier disposal of the debris.*
- Stimulates appearance of free-moving, normal leukocytes for phagocytosis.*
- Promotes growth of granulation tissue.*

Tryptar "can be used locally wherever clotted blood, fibrin or pus is present following trauma or inflammation."*

*Miller, J. M.: Postgrad. Med. 19: 16 (Jan.) 1956.

*Abscesses • burns • carbuncles and furuncles • decubitus ulcers (indolent, cutaneous) • gangrene • hematomas • osteomyelitis • sinuses and fistulas • ulcerations*

2 vial preparation. 1 vial contains 250,000 Armour units of purified crystalline trypsin. Companion vial contains 25 cc. of Tryptar diluent (Sorensen's Phosphate Buffer Solution) pH 7.1; plus plastic adapter to use with a powder blower.

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A DIVISION OF ARMOUR AND COMPANY • KANKAKEE, ILLINOIS


*(Continued from page 68)*

MEMBER CLINIC IN PACIFIC NORTHWEST UNIversity city of approximately 400,000 desires the services of Board eligible or certified otolaryngologist; salary open; full partnership and many other fine advantages and outstanding opportunities for the right man; prefer man under 35 years of age. Box 1896 C % AMA.

GENERAL PRACTITIONER — TAKE OVER 18 YEAR established practice; rent or sell well-equipped air-conditioned office; only physician, community 2000; excellent hospital 10 miles; excellent opportunity quick start without investment; owner leaving for health. F. Dale Johnson, MD, Waynetown, Indiana. C

GENERAL PRACTITIONER—DESIRING ADDITIONAL experience in 200 bed hospital*; supervise interns and externs; excellent experience in surgery, obstetrics-gynecology; salary open; apartment on grounds; area offers many opportunities for future private practice associations. Box 1890 C, % AMA.

EENT—UNOPPOSED WITH LARGE SURROUNDING territory in vigorous southwestern town of 12,000; excellently equipped office; superb schools; for sale; terms; retiring. Box 1688 C, % AMA.

WANTED—RECENT GRADUATE AS ASSOCIATE TO take over most of a general practice on a percentage basis; good opportunity for active young man. Dr. Breckenridge, Mason, Texas. C

**GENERAL PRACTITIONER — CALIFORNIA; WITH surgical training; join 2 established General practitioners in valley town; night calls, week-ends rotated; minimum guarantee $1000, partnership opportunity. Pacific Coast Medical Bureau, Agency, 703 Market, San Francisco.** C

WANTED — YOUNG PHYSICIAN; INTERESTED IN working with a group of young doctors for 3 or 4 months, or less; in southern West Virginia general and industrial practice; not over 35; 1 year of rotating internship required; some chance of permanent employment. Box 1891 C, % AMA.

**NEEDED — GENERAL PRACTITIONER AND EENT; for West Covina, fastest growing southern California City; finest medical Building now under construction; occupancy December 1956. George O. Shecter Associates, 1834 Pandora Ave., Los Angeles, California, Texas 06493.** C

OBSTETRICIAN-GYNECOLOGIST—TO JOIN 3 MAN department in 25 man specialty group; asociated new hospital,+ JCAH approved with AMA approved residency program; salary $15,000 per year with $2,000 yearly increments to $25,000 plus bonus. Contact: Director, The Lynn Clinic, Detroit 17, Michigan. C

SURGEON—TO ASSUME PRACTICE OF YOUNG DEceased physician in wealthy Chicago suburb; surgery and general practice; no obstetrics; office equipment available; no capital investment. For appointment write: Thomas Crowley, 1717 Glenview Road, Glenview, Illinois. C

LARGE COUNTY HOSPITAL — IN SOUTHERN UNIversity city; needs psychiatrists and staff physicians, preferably licensed or eligible; ward work and some teaching; competetive salary and complete family maintenance. Box 1921 C, % AMA.

**PEDIATRICIAN—SOUTHWEST; WANTED BY 4 MAN group, new clinic hospital; when fully staffed will have 8-10 doctors in major fields of medicine; financial arrangements open. Pacific Coast Medical Bureau, Agency, 703 Market, San Francisco.** C

PHYSICIANS WANTED — PHYSICIANS WITH SOME psychiatric experience; must supervise 1st year residents; salary $6900 to $7800 plus family maintenance. W. C. Brinegar, MD, Superintendent, Mental Health Institute+, Cherokee, Iowa. C

INTERNISTS AND GENERAL MEDICAL PHYSICIANS wanted—2400 bed hospital+; hourly commuting distance Chicago; salary ranges $7570-$11,610, depending upon qualifications. Write: Manager, Veterans Administration Hospital, Downey, Illinois. C

WARD SURGEON — BOARD CERTIFIED OR ELIgible; for surgical preceptor training program; salary up to $11,610 plus specialty allowance; appointment level based on qualifications. Write: Manager, Veterans Administration Hospital, Muskogee, Oklahoma. C

**WANTED—TWO MEN TO TAKE OVER WELL-ESTABlished general practice, within commuting distance of New York City. Box 1815 C, % AMA.**


## SHAY MEDICAL AGENCY

55 E. Washington Street
Chicago 2, Illinois

*Service of Distinction since 1914*

**ANESTHESIOLOGISTS:** (a) East; 300 bed hospital in city of 100,000. (b) MW; 150 bed hospital operated by group of specialists; will be head of dept. 2 well qual. nurse anesthetists. (c) Teaching hospital; ample opp. for teaching and research plus clinical work.

**DERMATOLOGISTS:** (a) MW; 12 man grp. of qual. spec. $12,000 min. ptnshp. 1 yr. (b) MW; Assoc. 2 board men; city of 50,000; some trng; cert. not req; exc. opp.

**GENERAL PRACTICE:** (a) Calif; city of 60,000; assoc. with well-estab. G.P. diversified prac; $12,000. (b) Calif; 8 man grp. near S.F. (c) Assoc; Rocky mountain area; good sal. start. (d) 6 man grp. near Wash., D. C.; good sal. start; ptnshp 1 yr. (e) Assoc; genl. & surg. prac; NW; start; ptnshp 1 yr. (f) Assoc; sub. of Chgo. large prac. excel opp. ptnshp. (g) MW; well-known grp; own med. bldg. new; $12,000 1st year, $15,000 2nd. then ptnshp. (h) MW; assoc. well-estab. prac. in city 90,000. $12,000. (i) S; Asst. large genl. prac. minor surg. no O.B. $12,000. (j) Assoc. MW; some surg. & O.B. City of 200,000. $10,000 min. to start. (k) NW; assoc. large prac. mining town of 6000 in resort area. $12,000 start inc. every 3 mo. ptnshp 1 yr.

**HOUSE PHYSICIANS:** (a) SE; 40 bed hosp; $7200. (b) S; 120 bed hospital in lge. city; assist. surg. $6000. (c) MW; pref. int. in surgery; 75 bed hosp. in large city; $12,000. (d) E; 50 bed hosp; $4200 plus 2 bedroom apt. (e) S; 175 bed hosp; exc. medical staff; $4200 maint.

**INDUSTRIAL PHYSICIANS:** (a) S; company employs 1200; growing; 5 day wk; priv. prac. if desired; $1,000 start. (b) Calif; large company; supervise in-plant medical facilities. (c) SW; plant employes 2300; work mostly preventative; $10-$12,000. (d) SW; plant employs 6000; modern med. dept; $10,000. (e) E; assoc. with indus. phys; great deal of traumatics; some genl. prac; $12,000.

**INTERNISTS:** (a) Calif. New Medical grp. near L.A. No invest. Estimate earnings $1000 mo. increase to $3-$4000. (b) Calif. Well est grp. located in highly populated area. $1100-$1200 mo. (c) Chief of Clinical Services with outstanding hosp. grp. $17-$20,000. (d) Well estab. grp. near Chgo. Own air cond. medical bldg. exc. hosp. facilities. $15,000 1st yr. $18,000 2nd. then ptnshp. (e) MW. 5 man grp. opp. for teaching in med. sch. To $12,000. (f) MW. Small grp. in progressive community. Excel hosp. facilities $12-15,000. (g) SW. 4 man grp. own 50 bed hosp. $12,000 minimum. (h) E. Assoc. with board man; large prac. excel. opp. (i) NW. Well est. grp. in city 30,000. New clinic bldg. $12,000 minimum.

**OB-GYN:** (a) SW; 20 man grp. new med. bldg. in large city. (b) Assoc. with Board man; large prac. near Wash., D. C.; $10,000; ptnshp. 1 yr. (c) MW; well-known grp. city 50,000; $12,000. (d) NW; cert. not nec; well-estab. grp. city 30,000; $12,000. (e) Univ. Med. Sch; faculty pos. teaching and research; priv. pract. perm; $12,000.

**OPHTHALMOLOGY:** (a) SW; 10 man grp. in city of 65,000; modern clinic bldg; $12,000. (b) Calif; grp. of yng. spec; will be only eye man; $12,000 start. (c) Assoc. with Board man; near Wash., D. C.; excel opp. (d) MW; grp. of 15 men in large city; $15,000 ptnshp. 1 yr. (e) Assoc. with 2 Board men only ones in drawing area 250,000; $15,000.

**PATHOLOGY:** (a) E; require cert; 350 bed hosp; $15-$20,000. (b) MW; 125 bed hosp; city 30,000; sal. plus can net $30,000. (c) SW; superv. med. spec. of lab. of old estab. clinic. $15,000 min. (d) NW; assoc. 200 bed hosp; city 75,000; $12,000 min.

**PEDIATRICS:** (a) SW; 10 man grp. growing rapidly; city 65,000; $12,000 start. (b) Calif; assoc. with 4 Board men; large prac; near S. F; $10-$12,000. (c) MW; small grp. in highly populated area; excel. hosp. facilities $12-$15,000. (d) E; assoc. with grp. of 4 internists; near Phila. $12,000. (e) NW; small grp; new clinic bldg. twn. 15,000; drawing area 40,000; $12-$14,000. (f) Pacif. NW; assoc. with Board man; city 50,000; $12,000.

**PHARMACEUTICAL:** (a) MW; clinical invest; some travel; $10-$12,000. (b) MW; export div; proficiency Span. and French; world travel; $12-$15,000. (c) E; clinical invest; $10,000 min. (d) Med. dir; some clinical invest; primarily admins; to $12,000.

**RADIOLOGISTS:** (a) MW; active priv. lab; near Chgo; $12-$18,000. (b) MW; assoc. with Board man; well-trained in X-ray diagnosis and isotopes. (c) NE; take over dept. in new 75 bed hosp; $15,000 min. (d) SW; assoc. with Board man; service 3 hosp; trng. in isotopes. (e) NW; 175 bed hosp; new lab; average earnings $2000 mo. (f) E; assoc. Board man; large prac; $15,000 1st yr. 2nd yr. $25,000.

Upon request one of our applications will be mailed to you. Write us today—a post card will do.


*(Continued on page 78)*

Challenge :Infection

Choice :Gantrisin

When you are confronted with a common infection, Gantrisin may be your first choice of an antibacterial because this single sulfonamide offers:

* effective action against a broad spectrum of microorganisms;
* high solubility in body fluids over a wide pH range;
* excellent tolerance with minimum risk of renal damage or sensitization.

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ARMY, NAVY, AIR FORCE STUDY ON MOTION-SICKNESS

PREVENTIVES REVEALS...

# BONAMINE* HCl

BRAND OF MECLIZINE HYDROCHLORIDE

HEADS THE LIST

**1.** *longest acting—*

"... the duration of action with meclizine [Bonamine] is clearly longer than that of the other drugs tested."
"... for long sea voyages where it may be necessary to continue medication for several days, meclizine [Bonamine] seems to be the drug of choice."†

**2.** *in recommended dosage Bonamine is notably free from side reactions—*

Bonamine did not show "... a higher incidence of any side-effect than did the placebo."†

*relief of symptoms in minutes*
*one dose often effective for 24 hours*

Tablets, tasteless, scored, 25 mg. Chewing Tablets, mint flavored, 25 mg.

Pfizer

*Trademark
†Report of Study by Army, Navy, Air Force Motion Sickness Team: J.A.M.A. 160:765 (March 3) 1956.

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Division, Chas. Pfizer & Co., Inc.

You can now give hay fever and other allergy sufferers predictable all-day, all-night relief with HISTIONEX.

This dependable new anti-histaminic, low in side effects, provides a pre-determined 10-14 hour anti-allergenic action because of 'Strasionic'—sustained ionic—release. Patients welcome the convenience of single capsule q12h dosage.

Rx Histionex '50' mg. (or Histionex '25' mg. for children age 6-12).

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PRE-DETERMINED ACTION
PREDICTABLE RELIEF

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For Literature and Samples, write R. J. Strasenburgh Co., Rochester, N.Y., U.S.A.


*(Continued from page 76)*

**WANTED—AMERICAN BOARD SPECIALISTS; PHYSICIANS interested in group or private practice, teaching, research, public health, or industrial medicine; National and International services. Our 60th Year. Woodward Medical Bureau, 185 N. Wabash Avenue, Chicago.** C

EENT—VACANCY FOR PHYSICIAN CAPABLE ALL phases EENT and eye; salary up to $11,610 plus specialty allowance, depending on qualifications. Write: Manager, Veterans Administration Hospital, Muskogee, Oklahoma. C

GENERAL PRACTITIONER—CALIFORNIA GROWING area about 80 miles from San Francisco; new office; to practice together with 3 other doctors; pleasant surroundings; start on salary and then have own practice. Box 1898 C, % AMA.

WANTED—GENERAL PRACTITIONER TO COMPLETE group, central California city; ideal, modern facilities; full partnership opportunity; surgical and/or general practitioner experience required; details 1st letter. Box 1799 C, % AMA.

WANTED—A PHYSICIAN FOR GENERAL PRACTICE; residence, office and equipment immediately available due to death of doctor in May; Citizens Committee ready to lend assistance. Contact: Herbert E. Boyd, Albion, Pennsylvania. C

GENERAL PRACTITIONER—UNDER 40 YEARS; FOR small, new group of general practitioners; $1000 monthly plus percentage; permanent position; Long Beach California. Lakewood Plaza Medical Group, 2925 Palo Verde, Long Beach 15, California. C

OPPORTUNITY — ASSISTANTSHIP OR PRECEPTORship in general and thoracic surgery leading to partnership for right man; resort city Florida; Florida Boards required; full particulars 1st letter. Box 1906 C, % AMA.

NEW JERSEY—WANTED, RESIDENT STAFF PHYSIcian; 900-bed hospital (psychiatric) with active treatment program; opportunities for research; New Jersey license or eligibility required; salary open. Box 1821 C, % AMA.

NORTHWESTERN MINNESOTA — TAKE OVER LUcrative, active general and surgical practice until July, 1957; equipped office near community hospital available on rental basis; immediate income; possible purchase later. Box 1217 C, % AMA.

RETIRING GENERAL PRACTITIONER—CAN INTRODuce and finance class A graduate; progressive growing 3000 town with large rural territory, Mid-South; 4 active men here now. Box 1897 C, % AMA.

ORTHOPEDIST—IN A RAPIDLY EXPANDING AREA in middle of California; salary for 6 months or a year; to take over practice after that; good facilities. Box 1899 C, % AMA.

**OUR 60TH YEAR**

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Medical Personnel Bureau
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3rd floor • 185 N. WABASH AVE. CHICAGO 1
• ANN WOODWARD • Director

*Founders of the counseling service to the medical profession, serving medicine with distinction over half a century*

**ANESTHESIOLOGY:** (o) Dir dept, gen hosp, 100 bds; fee basis; $15-20,000; lge city, univ med cntr; E.
**DERMATOLOGY:** (q) Dir dept, 14 cert or elig men; d est '39; twn 60,000 nr univ med cntr; MW.
**GENERAL PRACTICE:** (a) GP; Assn Bd internist, surg & GP; long estab; $18,000; Detroit area; recommended. (b) Pref w/1-2 yrs trng, med; consid rot internship; duties 90% med assn 12 man grp long estab; exc facil; $12,000 plus; MidS. (c) Assn w/GP est '22; oppor netting $15-18,000 1st yr; NJ.
**INDUSTRIAL MEDICINE:** (u) Med dir; very lge co; numerous regional plants; E. (v) Indus dept, grp 30 Dipls; $12,000; prtnrshp 3rd yr; Calif.
**INSURANCE MEDICINE:** (j) Ass't Med dir w/trng in internal med; a major company; SE.
**INTERNAL MEDICINE:** (r) Mature to hd dept; 8 man grp; outstand'g, cl facil; lge city on ocean; $12-15,000; Calif. (s) Assn int & rheumatory med w/disting'shd prof of med-arthritis; wonderful prac $12,000, prtnr; E. (t) Qual cardiology; assn 3 Mayo Trn'd Dipls (intnst, surg, oto); oppor academic post; MidS. (u) W/spec inter GI; 7 man grp; exc lab; $12-15,000; exc twn nr lge city, oil capital; W. (v) Assn, 22 man grp estab as partnshp '48; $15,000 1st yr, $18,000 2nd; prtnr 3rd; Chgo.
**NEUROSURGERY:** (t) Affil w/outstand'g Bd neurosurg; $18,000; oppor academic post; lge city; MW.
**OALR:** (f) Oto; Dir dept; new post; grp, 16 men, est '37; affil 2 med schls; oppor tchg; prefr well qual ENT surg; So. (m) Oph; Assn w/Bd oph, AAOO; $15,000; MW. (n) Oalr; hd new dept; 12 man grp; good sal 1st yr then prtnrshp. East.
**OB-GYN:** (q) Assn, grp 10 yng specialists; nr univ; Wisc. (r) Two-Assn 20 man grp; est '22; sal & % averging $15-20,000 1st yr; univ city; MW.
**ORTHOPEDICS:** (d) Hd dept, 19 Dipls; 300 bd hosp; oppor teh'g E. (e) Dir dept; new cl serv'g indus grp $17-20,000, annual increase to $25,000. So. (f) Dir dept, 14 man grp est '48; oppor $12-18,000; ptnr, 2 yrs; Los Angeles Area.
**PATHOLOGY:** (v) Dir dept, new hosp; staff 60; ½ Dipls on faculty sev med schls; guar & % shld not $30-35,000; recommended, MW.
**PEDIATRICS:** (u) Hd dept; new post; 5 man grp; expansion prog; $15-20,000; coll twn; PacNW. (v) Assn 20 Bd men, own hosp; oppor tchg, research; $15,000 increas'g $25,000; bonus; lge city; MW. (w) Assn w/Bd internst; founding grp, no invest; twn 15,000, 1 hr to NYC; excel hosps; $12,000; ftr ptr.
**P & N:** (w) Neurpsy; Mayo trnd Bd NP can turn over very busy NP pract; oppor tchg; lge city; NE. (x) Neurol; dir dept 20 man grp affil univ med schl; MW.
**RADIOLOGY:** (w) Dir dept, gen vol fully appr'd 300 bd hosp; tchg prog; excel remuneration; E. (x) Immed ptnrshp w/emminent Bd rad; known to us & recommended; attrac city on Puget Sound, Wash State.
**RESEARCH:** (k) Dir dept research & med relations; very reputable co; long est in proprietary field; now estab'g ethical division; $17,500.
**SURGERY:** (h) Chief; gen hosp 90 beds; $12-15,000; E. (i) Gen surg; grp assn; 7 men own sm hosp; $15-18,000; Calif. (j) Fellowship; 14 man grp, mostly w/academic posts; oppor con't after cert'd; So.
**UROLOGY:** (y) Hd dept 3 specialists; $12-15,000; equal ptnr 1st yr; coll twn; N.W.

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YOUNG GENERAL PRACTITIONER—INTERESTED IN obstetrics and pediatrics; to join 3 man group in suburban area, large midwestern city; Minnesota license necessary. Box 1903 C, % AMA.

GENERAL PRACTITIONER—MIAMI, FLORIDA; WITH established group; must have Florida license and have fulfilled military obligation; starting salary $800 month with partnership opportunity. Box 1904 C, % AMA.

TRAINEESHIP IN RHEUMATOLOGY — AVAILABLE immediately in university center*+; participate in clinical investigation, diagnostic and therapeutic program. Box 1918 C, % AMA.

**WANTED—IMMEDIATELY; RESIDENT PHYSICIAN; accredited 150 bed general hospital; 90 miles east of Pittsburgh, Pennsylvania; license required; salary $600 per month. Box 1915 C, % AMA.**

WANTED — RADIOLOGIST; ASSOCIATION WITH 9 man group leading to partnership; above average salary with bonus; no capital outlay needed; professional and personal data requested. Box 1920 C, % AMA.

WANTED—OBSTETRICIAN-GYNECOLOGIST; BOARD eligible; to join 7 man group in college town of 20,000 with accredited hospital. Box 1893 C, % AMA.


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*(Continued on page 80)*

increasingly preferred

by physicians

strikingly effective for patients

in allergic

and inflammatory

skin disorders

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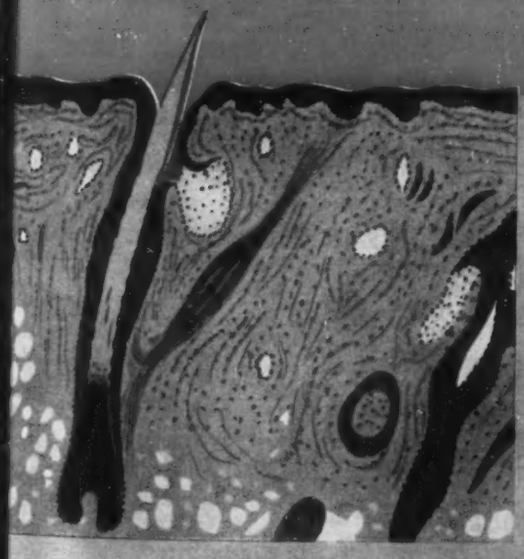

- excellent relief in poison ivy dermatitis, other contact dermatoses, allergic eczemas, drug reactions and other dermatologic disorders
- dietary regulations usually unnecessary
- minimizes incidence of electrolyte imbalance

METICORTEN is available as 1, 2.5 and 5 mg. white tablets.

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*T. M.

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**Recurrent throbbing headaches**
**e.g. Migraine**

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*Ergotamine tartrate 1 mg. with caffeine 100 mg.*

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**Relief in 90% of over 2000**
**published cases reported to date.**
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**The Medical Bureau**
PALMOLIVE BUILDING CHICAGO

**ACADEMIC:** (A23) Ass't prof., Medicine; well qual. cardiac catheterization; plans completed new med school, tch'g hosp.
**ANESTHESIOLOGY:** (B22) Chief and associate; closed group, 34 men; new 350 bed hosp; ideal working, living conditions; res. town, short distances, several lge cities; E.
**ASSISTANTS:** (C96) By GP; busy pract; own hosp; adv. if int. derm or urol., not req; partner oppor. So. Calif. (C97) Gen pract. including surg., Ob; small town near univ. city, med. center, S. C.
**GENERAL PRACTICE:** (F14) Group ass'n; resort city, Florida; min. $800. (F15) Ass'n., well established GP; one of largest towns, Alaska; fine living for family; early partner. (F16) GP to serve as sup't small hosp., mentally retarded; staff includes business manager; univ. town, SW; $12,000 including attractive home. (F17) GP qual. ordinary gen. surg; sugar plantation; Hawaii (F18) Ass'n, one of oldest and largest GP groups in Calif; pract. rapidly expanding.
**INDUSTRIAL MEDICINE:** (G81) Ass'n, one of country's leading clinics, long estab; staff of distinguished specialists; Calif (G82) Indus. MD or internist int. career indus. med; major co; univ. town, Ohio.
**INSURANCE MEDICINE:** (X40) Ass't med. dir; one of major companies; E.
**INTERNAL MEDICINE:** (H68) qual. G. I. fluoroscopy & another qual. one of other subspecialties; 12 man group estab. '21; coll. town, 50,000; drawing area 125,000, Rocky Mt state; partner after yr. (H69) Head dept, new gen'l hosp., serving lge indus. group; if Board, $17,000-$20,000; annual increases $1000 for 5 yrs; So. (H70) Ass'n, 2 Board internists; full partner 2d yr; Oregon. (H71) Ass'n, Board internist, chief dept, modern, approved hosp; serving radius 20 miles; attractive town between Green & Adirondack Mts.
**NEUROSURGERY:** (I15) Ass'n, Board neurosurgery; busy pract; Calif.
**OALR:** (E25) Oto., qual. fenestration, nase-plastic; ass'n, lge priv. ALR pract; oppor. partner; San Francisco area (E26) Oto. head dept, 12 man group; coll. town, 30,000, near univ. city, Pac. NW (E27) Oph. and oto, oto. head depts, foreign operations, major indus. co.
**ORTHOPEDICS:** (K7) Young orth. qual. reconstructive surg; 20 man group; univ. city, Rocky Mts. (K8) Head dept, 14 man group, Diplomates or near cert; new clinic bldg; percentage; oppor. partner after 2 yrs; So Calif. (K9) Head dept, excel. group; Ohio.
**OBSTETRICS-GYNECOLOGY:** (J62) Head dept, 7 man group; new clinic bldg; small town, Rocky Mts; should net $15-$19,000 1st yr. (J63) Ass'n, 18 man group, own hosp; lge city, med. center, MW; min. $15,000; annual increases $2000 until $25,000 reached.
**PATHOLOGIST:** (L43) Dir., 200 bed gen. hosp; well-staffed dept; $17,500, 50%, plus outpatient dept; E. (L44) Ass'n, path. group; Calif. (L45) Dir. dept, vet. gen. hosp., 300 beds; well equipped dept, school for med. techs, approved path. res; univ. city, MW.
**PEDIATRICS:** (M19) Ass'n, 7 man group; dept. now staffed by 2 Board men; partner after 6 months; res. town, Calif (M20) Ass'n, 15 man group; coll. town, 100,000 adjacent lge city, med. center; MW (M21) Ass'n, 3 man pediatric clinic; partner after 6 months; resort town, 60,000 Pac. NW.
**P & N:** (P7) Ass'n, priv. pract. group specializing psychoneurotic med; pref. one with some training int. med. as well as psy; res. town, E; $12,000 increasing to $20,000. (P8) Psy, head dept, 15 man group; early partner; coll. town, 65,000, MW.
**RADIOLOGY:** (R35) Chief; new gen hosp., 225 beds; % netting min. $25,000; coll. town, 125,000, SW (R36) Chief; new 200 bed hosp.; % netting $35,000-$40,000; So.
**STUDENT HEALTH:** (T68) Dir. univ. dept, 5000 students; SW.
**SURGERY:** (U89) Gen. & thoracic surg; ass'n, Board surg; oppor; partner after yr; So. (U90) Surg. trained in surg. of trauma; assn, lge private indus. practice; min. $1000; partner after yr.
**UROLOGY:** (W49) Ass'n, 2 Board urologists; early partner, Chicago area.

Please send for our Analysis Form
**Burneice Larson** DIRECTOR

*(Continued from page 78)*

WANTED—GENERAL PRACTITIONER; PREFERABLY 35 or younger; to take over half of thriving and growing practice in Los Angeles suburb. Rivera Medical Center, 9265 Telegraph Road, Rivera, California. C

CALIFORNIA CLINIC—LONG BEACH AREA; OFFERS unusually good proposition to certified pediatrician and internist. New York Medical Exchange, 489 Fifth Avenue, New York City, Patricia Edgerly, Director. C

WANTED — YOUNG PHYSICIANS; INDUSTRIAL pharmaceutical and chemical companies and hospitals; psychiatrists, anesthesiologists. Medical Personnel Agency, 7 East 42nd St, New York, New York. C

WANTED IMMEDIATELY—RESIDENT HOUSE PHYsician; grand opportunity for young man who has just completed his internship or residency; general hospital, 154 beds and organized medical staff, 50 physicians; applications accepted for 1 year or longer as individual desires; starting salary $3,200 per annum; desirable opening with close association with medical profession of community; applicants from Exchange Visitor Program cannot be accepted. Apply: Matthew I. Barron, Director, Portland City Hospital, Portland, Maine. Interview granted at applicant's convenience. C

WANTED—FULL TIME PHYSICIAN FOR RAILWAY; must be eligible for license in Virginia, West Virginia and Ohio, and under age 55. Box 1809 C, % AMA.

MEDICAL OFFICER—GLENN DALE HOSPITAL, THE tuberculosis hospital for the District of Columbia; salary $9000 to $10,300 per annum depending on qualifications; sick leave, annual leave, and retirement benefits; satisfactory completion of 1 year of approved residency in pulmonary diseases or internal medicine, or comparable experience required; must be eligible for licensure in District of Columbia; outpatient clinic service connected with hospital. Address inquiries to: Medical Director, Glenn Dale Hospital, Glenn Dale, Maryland. C

GENERAL PRACTITIONER—FOR ASSISTANT COUNty physician; unlimited opportunity to practice in a 350 bed hospital, general medical and surgical; starting salary $10,000 yearly; a 3 bedroom home may be available on the hospital grounds; a California license and citizenship is required; the climate in northern California coastal, and the area is one of lumbering and sportsmans vacationland; an excellent future awaits the doctor who wishes to be busy in general practice. Box 1713 C, % AMA.

ANESTHESIOLOGISTS—THREE FULL TIME SENIOR positions available for anesthesiologists in University Hospitals*+ of Cleveland, Ohio, in September and December, 1956; opportunities for clinical anesthesia, resident and medical student teaching and research in this developing department, now operated by a group of 10 physician anesthesiologists. Interested applicants write to: Robert A. Hingson, MD, Director, Department of Anesthesia, University Hospitals of Cleveland, 2065 Adelbert Road, Cleveland 6, Ohio. C

PATHOLOGIST—VA HOSPITAL+, HINES, ILLINOIS, has vacancy for full-time Board eligible or certified pathologist in very active large general hospital; must be U. S. citizen; salary dependent on qualifications up to $13,760; clinical laboratory equipped with finest and latest instruments if interest lies in clinical pathology; will assist in teaching the pathology, surgical and medical residents in the department. Apply: Director, Professional Services, V. A. Hospital, Hines, Illinois. C

TWO YOUNG PHYSICIANS WANTED—TO TRAIN FOR positions in public health; graduate AMA approved school; good character, good personality, good health; no experience or training required; rapid advancement for right man; beginning salary $7200-$7500 per year; reimbursement for travel in performance of duties; good retirement system; write for applications. Wilson T. Sowder, MD, State Health Officer, P. O. Box 210, Jacksonville 1, Florida. C

WANTED—VA HOSPITAL, BIG SPRING, TEXAS; admitting officer. For additional information write to: Personnel Officer, VA Hospital, Big Spring, Texas. C

**MEDICAL PLACEMENT**
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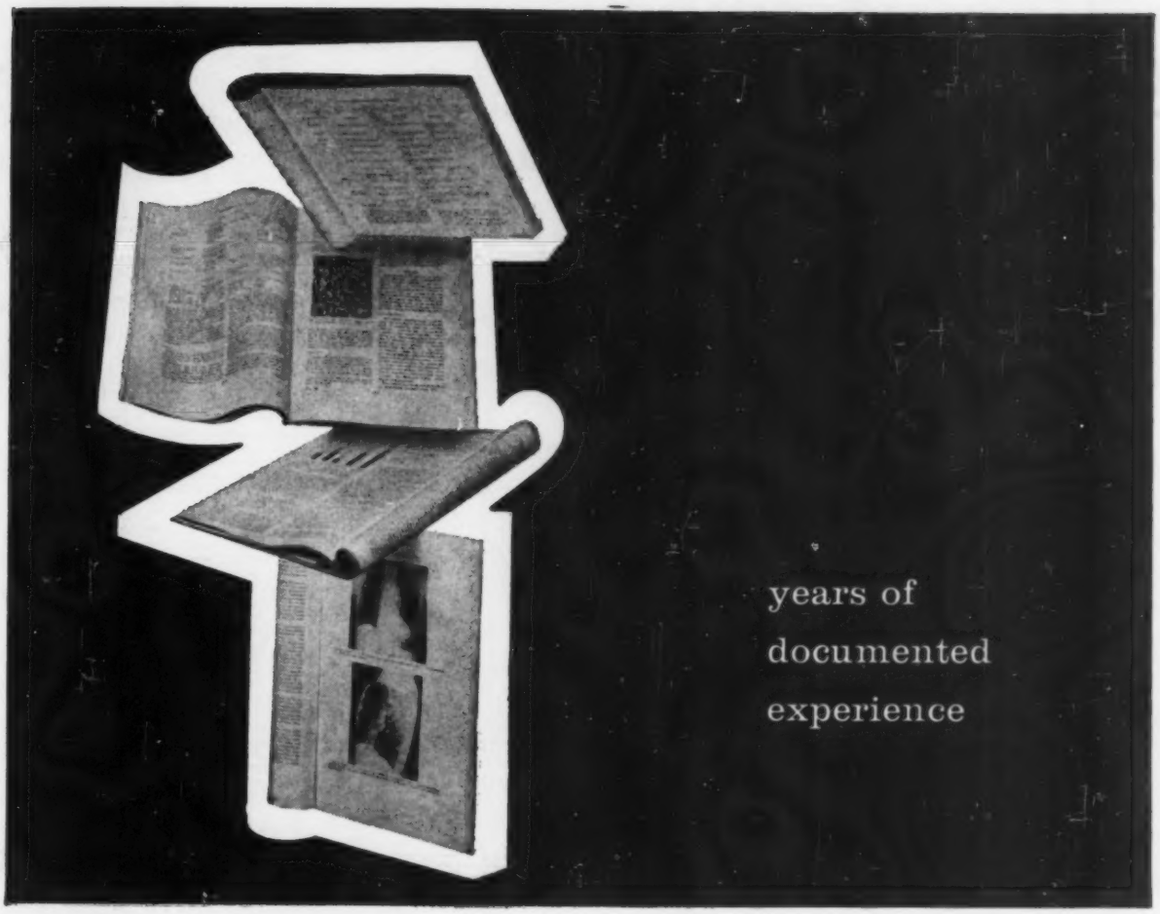
We serve the South.
Write us for information about openings.
(Mrs. Stewart R. Roberts, Director)

*(Continued on page 82)*

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Among available, effective diuretics, the organomercurials have behind them over three decades of successful clinical use. Their clinical background and thousands of reports in the literature testify to the value of the organomercurial diuretics.

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Compounded in a pleasing strawberry-flavored syrup, Vermizine solves administration problems—is highly acceptable even to small children.

A complete schedule of Vermizine therapy and directions as to patient's personal hygiene are available.

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Pacific Coast Branch

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*(Continued from page 80)*

PATHOLOGIST—TO DIRECT CLINICAL LABORATORY in 3000 bed psychiatric hospital+ located 45 miles from New York City, only 15 minutes from seashore resorts; approximately 150 autopsies performed yearly; require Board Diplomate license to practice in New Jersey; salary $10,200 with $600 yearly increments to $13,200. Apply: Medical Director, New Jersey State Hospital at Marlboro. C

APPLICATION INVITED — FOR FELLOWSHIP IN hemotherapy and immunohematology; excellent training opportunity for young physician interested in blood transfusion work and collaboration in research; required experience minimum of 1 year residency in pathology or internal medicine; 1 to 3 years; $3600 to $4800. Apply: Dr. Kurt Stern, Director, Mount Sinai Blood Center, 2755 W. 15th St., Chicago 8, Illinois. C

WANTED—FULL TIME HEALTH OFFICER; FOR central California County; new building well-staffed; position open August 15; salary range @ 741 to 888 month; applicant must be a citizen and California Board eligible, also he should have had training in public health work. Write: Kings County Board of Supervisors, Hanford, California. C

WANTED—GENERAL SURGEON WITH TRAUMATIC experience; give age and particulars of training; eastern hospital 200 beds; salary $15,000 per year. Box 1849 C, % AMA.

**BOARD ELIGIBLE INTERNIST—FOR FLORIDA State Tuberculosis Hospitals; rapidly developing program with opportunities for advancement; beautiful hospitals; furnished houses available; liberal retirement and other benefits; salary dependent upon qualifications. Write: Roberts Davies, MD, Director, State Tuberculosis Board, P. O. Box 286, Tallahassee, Florida. C**

ANESTHESIOLOGIST, MD — WANTED IMMEDIately; for VA Hospital+ with very active surgical service; resident training program in surgery; affiliated with Johns Hopkins Hospital and University of Maryland Medical School; salary according to experience with bonus of 25% for Board diplomates. For further inquiries contact: Manager, VA Hospital, Perry Point, Maryland. C

INTERNIST—INTERESTED IN TUBERCULOSIS MEDical chest, bronchoscopy, pulmonary function; general medical ward supervision; research, teaching students and residents; medical service; 240 bed TB hospital.+ Indiana University School of Medicine affiliated; citizenship required. F. L. Jennings, MD, VA Hospital, Indianapolis, Indiana. C

OTOLARYNGOLOGIST — FOR STAFF OF GROUP practice clinic serving membership of over 20,000 in Washington, D. C.; prefer Diplomate or Board eligible physician; annual salary open; 1 month vacation; study leave; sick leave; comprehensive retirement plan. Write to: Medical Director, Group Health Association, 1025 Vermont Avenue, N. W., Washington 5, D. C. C

WANTED—PHYSICIAN INTERESTED IN INTERNAL medicine; new ultra modern 100 bed GM&S hospital; modern 2 bedroom apartment available; salary up to $14,000 depending upon qualifications; our chiefs of medicine and surgery are both Board men. Apply: M. J. Robertson, MD, Manager, Veterans Administration Hospital, Miles City, Montana. C

**WANTED—FOR ACTIVE GROUP PRACTICE CLINIC and 35 bed hospital; 1 general practitioner with anesthetic experience and 1 Board eligible otolaryngologist; to participate in expanding practice; unopposed access to 50,000, rapidly expanding, population in eastern industrial community; Pennsylvania license required. Box 1844 C, % AMA**

PSYCHIATRIST-DIRECTOR — WITH QUALIFIED training in child psychiatry; in a well-established mental hygiene clinic; member AAPCC; diagnostic, therapeutic and training program with multi-discipline approach; 30 miles from New York; salary $12,000-$15,000. Apply: Dr. Archie Crandell, Medical Superintendent, Greystone Park, New Jersey. C

GENERAL PRACTITIONER—MAYO, MARYLAND; TEN miles from Annapolis General Hospital; near beach resorts, prosperous farms; area population 3000; doubles in summer; excellent prospects, pleasant surroundings; local doctor retired. Write: Mrs. Ruby F. Reid, Mayo Community & Recreation Association, Mayo, Maryland. C

**GENERAL PRACTITIONER — TO ASSOCIATE WITH established general practitioner in New Orleans; ample hospital, post-graduate, cultural, recreational facilities; attractive financial arrangement with early partnership; give all details 1st letter. P. O. Box 1098, New Orleans, Louisiana. C**

WANTED—PHYSICIAN; GENERAL PRACTICE INdustrial hospital and clinic for 2 large mining companies; office furnished; $729 per month with privilege of private practice plus extra on insurance basis; give personal and professional data in 1st letter. Box 1296, Miami, Arizona. C

EXCELLENT OPPORTUNITY—FOR PHYSICIAN INterested in becoming established 50 miles from Chicago as an assistant to a general practitioner; must qualify for AMA membership; starting salary $700 per month; opportunity for partnership if mutually satisfactory. Box 1832 C, % AMA.

PHYSICIAN AND SURGEON WANTED—IN DOUGLAS, Arizona, town of 14,000; to join medical staff of copper corporation; salary plus allowance for surgery on employees families and allowed to do private practice. Write to: Chief Surgeon, Phelps Dodge Hospital, Douglas, Arizona. C

**HOUSE PHYSICIAN — FOR NEW, AIR-CONDItioned, modern 400 bed general hospital; completion date December 1956; comfortable living quarters, attractive personnel policies. Apply: Administrator, Richmond Memorial Hospital, 1300 Westwood Avenue, Richmond, Virginia. C**

STAFF PHYSICIAN—LARGE TUBERCULOSIS SANAtorium; suburban location, South Central; university affiliation with faculty appointment; good salary plus two bedroom modern home, and full family maintenance; eligibility for state license is a prerequisite. Box 1726 C, % AMA.

**OHIO — GENERAL PRACTICE; CLEVELAND WEST side; now available; 1st floor; equipment furnished; air conditioning, etc.; prefer age 30-35; must be well-qualified; active private practice in expanding section of Cleveland. H. B. Riser, MD, 14601 Puritas Rd., Cleveland 11, Ohio. C**

WANTED—ASSOCIATE RADIOLOGIST; IN A MIDwestern clinic and hospital+; good starting salary; pension and retirement plan; applicant must have Boards or be Board eligible; interest in residency training is desirable for the hospital approved for 3 year radiology residency. Box 1861 C, % AMA.

**CLINICAL INVESTIGATION—EXCELLENT OPPORTUnity with rapidly expanding pharmaceutical company for physician interested in clinical research; experience desirable but not essential; eastern location; send complete details including age, education, experience, draft status and minimum salary desired. Box 1823C, % AMA.**

WANTED—GENERAL PRACTITIONER INTERESTED in practicing good medicine; to join 7 man group in small community in heart of scenic West; regular vacation and post-graduate study time; net approximately $12,000 1st year; send particulars 1st letter. Box 1888 C, % AMA.

PSYCHIATRIST — CERTIFIED OR EXPERIENCED; private sanatorium, 50 beds; office practice and consultations; experience in institutional management would be desirable but not necessary; Southwest; salary anticipating partnership; good opportunity. Box 1804 C, % AMA.

**WANTED—YOUNG PHYSICIANS; 500 BED HOSPItal for chest diseases; active medical, surgical training and research program; salary range $7570 to $13,760. Write or apply: Manager, VA Hospital, San Fernando, California. C**

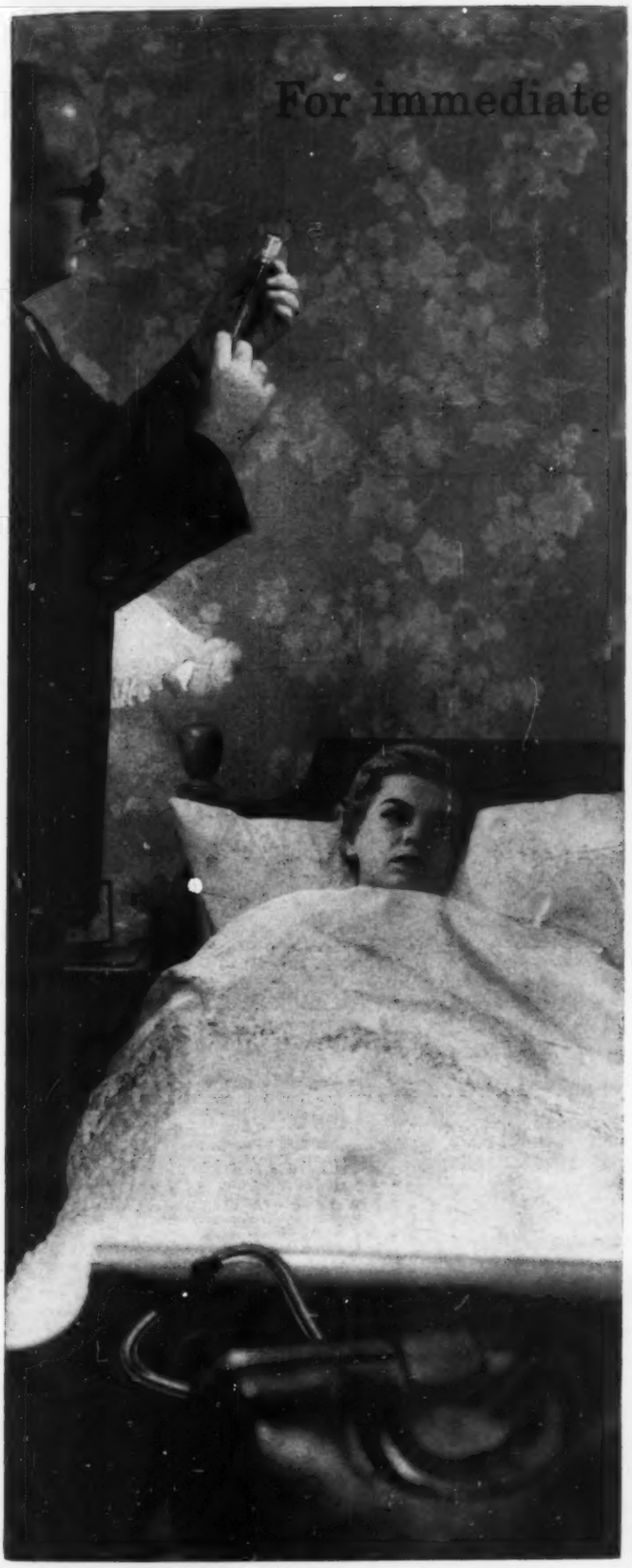
INTERNIST WANTED—JOIN SMALL GROUP OF TWO surgeons, 1 internist; Boards or Board eligible only; start at $10,000; percentage as rapidly as desired; full information 1st letter; general medical, private practice; Iowa. Box 1847 C, % AMA.

**RADIOLOGIST — TO COMPLETE GROUP; PRIVATE radiological office; service 500 bed general hospital; 2 outlying hospitals; state qualifications 1st letter; training in isotopes essential; salary 1st year; early partnership can be anticipated. Box 1805 C, % AMA.**

FULL TIME MD ANESTHESIOLOGIST—CAPABLE OF operating a school for nurse anesthetists; excellent salary; beautiful hospital. For information write: Mr. Frank W. Brown, Administrator, Edgewater Hospital,* 5700 N. Ashland Ave., Chicago 26, Illinois. C

WANTED—AMERICAN BOARD SPECIALISTS; PHYsicians interested in group or private practice, teaching, research, public health or industrial medicine; National and International services. Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago. C

*(Continued on page 84)*



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Valuable time may be lost between the moment you write your prescription for a broad-spectrum antibiotic and the moment your patient takes the initial dose. To start a patient on his regimen immediately, many physicians employ ACHROMYCIN Tetracycline Intramuscular. A few vials in your bag (and in your office) make immediate potent therapy a certainty.

With ACHROMYCIN you can expect prompt control, with minimal side effects, over a wide variety of infections. For your convenience and your patient's comfort there are 21 dosage forms of ACHROMYCIN. Each one is made in Lederle's *own* laboratories and offered *only* under the Lederle label—your assurance of quality control.

*SAVES LOST TIME BEFORE PATIENT STARTS THE REGIMEN*
Each vial of ACHROMYCIN Intramuscular contains 100 mg. of Tetracycline HCl, 40 mg. of Procaine HCl, 46.84 mg. of Magnesium chloride, and buffered with 250 mg. of Ascorbic acid.
*CONVENIENT IN THE OFFICE OR ON CALLS*

It's hard to beat the palatability of ACHROMYCIN Syrup. Any youngster (or adult) will like its sweet cherry flavor. Prescribe it with confidence that it will be taken without fuss. Potency: 125 mg. per teaspoonful (5 cc.)

Topical infections often respond dramatically to treatment with ACHROMYCIN Ointment 3%. This bland-base salve is offered in ½ and 1 oz. tubes.

The Lederle representative or your local pharmacist will gladly advise you on the many other ACHROMYCIN dosage forms.

Lederle LEDERLE LABORATORIES DIVISION, AMERICAN CYANAMID COMPANY, PEARL RIVER, NEW YORK
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*(Continued from page 82)*

**CALIFORNIA MEDICAL BUREAU AGENCIES—FTR physicians placements, and hospitals and medical properties for sale. 405 E. Green Street, Pasadena, California, and 610 S. Broadway Street, Los Angeles 14, California.** C

WANTED—FULL TIME PHYSICIAN; TO TAKE OVER health program of State training school for delinquent boys. If interested, contact: Arthur G. Dozier, Superintendent, Florida Industrial School for Boys, Marianna, Florida. C

**FIVE MAN GROUP—INCLUDING CERTIFIED SURgeon and certified internist; desires general practitioner; southeastern city serving 20,000; new clinic building; eventual partnership; beautiful country; ideal climate. Box 1795 C, % AMA.**

ROENTGENOLOGIST—FOR LARGE TEACHING HOSpital+ affiliated with Ohio State University Medical School; citizenship required; salary dependent on qualifications. Write to: Dr. A. Tomasulo, Director, Professional Services, VA Center, Dayton, Ohio. C

**FELLOW OR ASSISTANT — ANATOMIC, CLINICAL, experimental, and legal pathology; immediate opening; remuneration depends on qualifications, future on services. Send curriculum with first letter to: P. O. Box 228, Dover, Delaware.** C

INTERNIST—BOARD CERTIFIED; TO JOIN BOARD surgeon and industrial surgeon as backbone of group in midwestern city; excellent opportunity for professional and economical growth; suburban living and varied summer recreation available. Box 1811 C, % AMA.

OPHTHALMOLOGIST WANTED—FOR A MID-WESTern clinic and hospital+; ample salary, retirement and pension plan and other inducements; must have Board certification or be eligible for Board examination. Box 1860 C, % AMA.

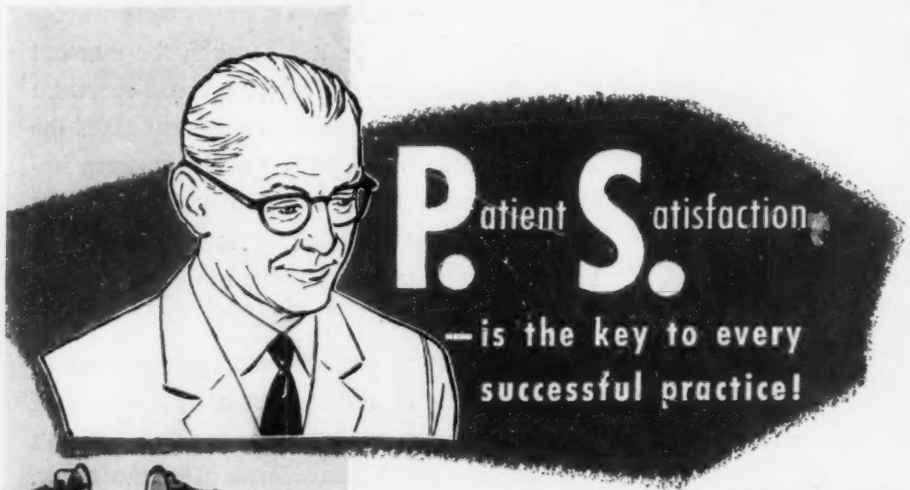
WANTED—YOUNG PHYSICIAN; AS ASSOCIATE TO general practitioner; rural Iowa town 700 population; excellent opportunity learn surgery if interested; starting salary, partnership later if mutually satisfactory. Box 1838 C, % AMA.

**WANTED—GENERAL PRACTITIONER; AGE 30 TO 40; to associate with 50 bed hospital established 42 years; duties; office and house calls, obstetrics, assist in surgery; good future for one willing to work. Box 1850 C, % AMA.**

COLORADO COMMUNITY WITH 15 BED HOSPITAL; urgently in need of physician; present doctor leaving for specialization; center of large ranching area; excellent schools and churches. Contact: Chester Totten, Simla, Colorado. C

WANTED — INTERNIST; BOARD CERTIFIED OR qualified; to associate with established clinic in northern Iowa; excellent clinic and hospital facilities; outstanding community; guarantee, with full partnership after 1 year. Box 1816 C, % AMA.

**GENERAL PHYSICIANS—SEMI-RURAL WEST VIRginia location; balanced generalist-specialist group; excellent facilities; hospital affiliation; guaranteed net income—minimum $12,000, greater if location and experience warrant. Box 1662 C, % AMA.**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PEDIATRICIAN—BOARD OR BOARD ELIGIBLE; medical group; Staten Island, New York City; desirable working conditions; attractive future; no financial investment. Write: Daniel Stats, MD, 8 West 58 Street, New York 19. C

WANTED—PHYSICIAN; ASSOCIATE MEDICAL Director, Iowa State Teachers College; good position, salary and working conditions; now available; good future. Write: Director, Student Health Service, Cedar Falls, Iowa. C

WANTED—A GENERAL SURGEON; BOARD ELIGIble or Board certified; in clinic in northern Minnesota; participation after 1st year; drawing area, 50,000 population; full information on request. Box 1868 C, % AMA.

WANTED BY OCTOBER 15TH—BOARD QUALIFIED anesthesiologist; to head department in community hospital near Boston; income fee-for-service basic and additional guaranteed salary as consultant. Box 1870C, % AMA.

PSYCHIATRIST WANTED—FOR 72 BED PRIVATE psychiatric hospital; knowledge of insulin and ECT required; 1 year contract, $7,000 plus maintenance. Write for information and application form to: O. Rozett, MD, Fair Oaks, Inc., Summit, New Jersey. C

WANTED—BOARD QUALIFIED OBSTETRICIAN-Gynecologist; splendid opportunity in 10 man Iowa group with liberal starting salary and eventual partnership. Box 1876 C, % AMA.

WANTED—VA HOSPITAL, BIG SPRING, TEXAS; internist or general practitioner. For additional information write to: Personnel Officer, VA Hospital, Big Spring, Texas. C

WANTED — EENT DEPARTMENT HEAD IN SIX doctor clinic in Texas; ophthalmologist preferable; Board certification desirable, not necessary. Box 1874 C, % AMA.

EYE-EAR-NOSE-THROAT DOCTOR — IN CLINIC which has been established thirty years; locum tenets with possibility of partnership; quarters and salary, also percentage. Box 1486 C, % AMA.

WANTED—GENERAL PRACTITIONER; FOR RURAL area; 2500 population; general farming—sawmilling; hospitals in nearby towns. Contact: J. W. Beazley, Beaverdam Ruritan Club, Beaverdam, Virginia. C

WELL-ESTABLISHED HOSPITAL+ IN MIDDLE west—has opening for clinicians in otolaryngology; part-time; maintenance if desired; Illinois licensed. Box 1882 C, % AMA.

**ANESTHESIOLOGIST WANTED — FOR CALIFORNIA group; top income and ideal conditions; must have excellent training and qualifications in all aspects of anesthesia. Box 1836 C, % AMA.**

WANTED — PEDIATRICIAN; BOARD QUALIFIED; eight man group; well-established in growing Gulf Coast area; guarantee 1st year, full partnership in 5 years. Box 1833 C, % AMA.

**RADIOLOGIST—ASSISTANT IN 250 BED COMMUNITY hospital*+ near New York City; must be recent graduate certified in radiology; excellent financial arrangement. Box 1845 C, % AMA.**

DEAR DOCTOR—IF WILLING TO WORK AND INterested in holding unusual practice, have such practice which will sacrifice to competent operator; give details if interested. Box 1858 C, % AMA.

ANESTHESIOLOGIST — BOARD ELIGIBLE; TO ASsociate with Florida anesthesiologist in private practice in central Florida location; objective, permanent partnership. Box 1828 C, % AMA.

WANTED — GENERAL PRACTITIONER; TO TAKE over well-equipped roomy office; large thickly populated rural district; inventory on request; terms reasonable. P. O. Box 86, Everson, Washington. C

ANESTHESIOLOGIST—TO JOIN 14 MAN MEDICAL group; including 3 surgical residents; 106 bed hospital; college town of 3000; opportunity to become member of clinic partnership. Box 1798 C, % AMA.

WANTED—VA HOSPITAL, BIG SPRING, TEXAS; pathologist. For additional information write to: Personnel Officer, VA Hospital, Big Spring, Texas. C

**WANTED—BOARD OR BOARD ELIGIBLE OTOLARyngologist; qualified in endoscopy; to become full partner in 5 man clinic. Box 1873 C, % AMA.**

WANTED—YOUNG OBSTETRICIAN; TO ASSOCIATE with midwestern clinic group of 9 men; salary open; partnership available. Box 1872 C, % AMA.

## INTERNS AND RESIDENTS WANTED

*The * signifies a hospital approved for internships and the + approved for residencies in specialties by the Council on Medical Education and Hospitals of the A. M. A. Consult Council's approved list for types of internships and residencies approved.*

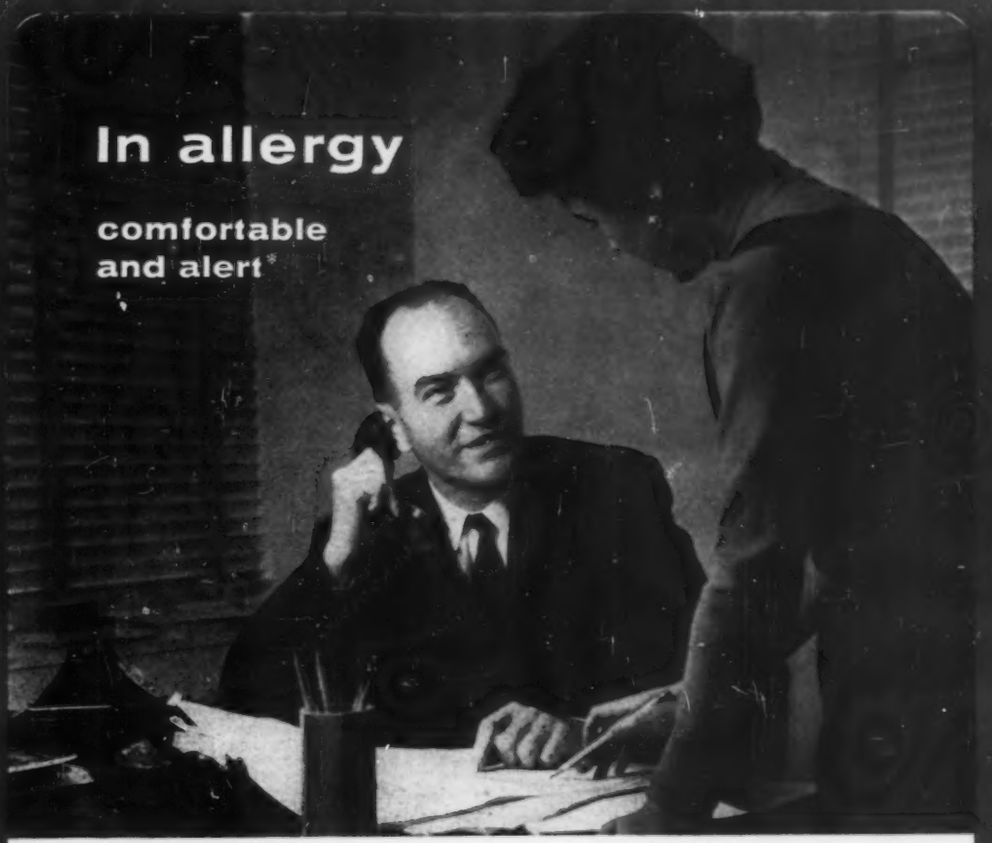
PSYCHIATRY — STAFF AND RESIDENCY VACANcies; approved 3 year psychiatric residency in conjunction with Northwestern University Medical School; extensive training programs in related fields; staff salary $7570-$11,610, depending upon qualifications; 25% additional if Board certified; hourly commuting distance Chicago. Write: Manager, Veterans Administration Hospital+, Downey, Illinois. D

AVAILABLE RESIDENCIES — WOMAN'S HOSPITAL +; 125 beds; specialized obstetrics, gynecology; fully approved 3 year residency; 4,666 deliveries, 2,999 operations, 19,000 clinic visits 1955; selections during November for July 1, 1957; 1 1st year vacancy immediately available; maintenance, $150, $175, $200. Columbia Hospital for Women, Washington 7, D. C. D

RESIDENT PHYSICIAN—RADIOLOGY; UNEXPECTED vacancy available November 1, 1956; 3 years 4 months including therapy and radioactivity isotopes; fully approved. Apply now to: William D. Evans, MD, Assistant Medical Director, Los Angeles County General Hospital+, 1200 N. State St., Los Angeles 33, California. D

PSYCHIATRIC RESIDENCIES — APPROVED AMA+; up to $8280 to start; housing; time off for psychoanalysis; Boston area. Box 1889 D, % AMA.

*(Continued on page 86)*

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***Supplied***

*Tablets*—25, 50, and 100 mg.

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1. Criep, L. H., and Aaron, T.: J. Pediat. *34*:414, 1949.
2. New and Nonofficial Remedies, Philadelphia, J. B. Lippincott Company, 1956, p. 13.
3. Schwartz, E.: Ann. Allergy *7*:770, 1949.
4. Basic Drugs, U. S. Public Health Service Hospitals and Clinics, Federal Security Agency, P.H.S. 1953, p. 99.
5. Feinberg, A. R.: Postgrad. Med. *13*:266, 1953.
6. Friedlaender, S., and Friedlaender, A. S.: J. Lab. & Clin. Med. *33*:865, 1948.

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(1) 4.5 times adult minimum daily requirements

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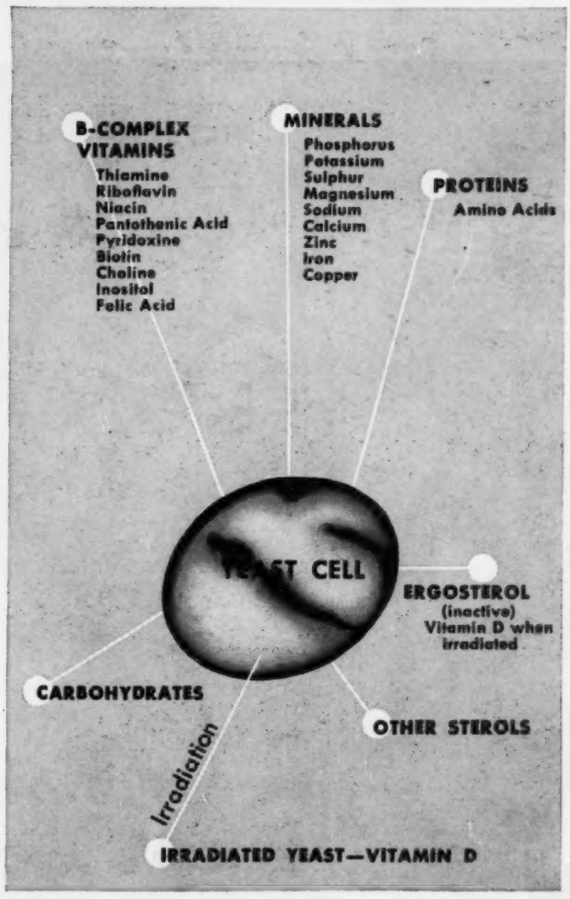
*Fleischmann's Pure Dry Yeast Type 50-B—U.S.P. grade.

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*(Continued from page 84)*

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IMMEDIATELY AVAILABLE—2 AMA APPROVED Internships; new facilities; fully-approved Joint Commission; 200 bed general hospital*+; 8900 admissions, 1100 births last year; good salary plus housing. Apply: Chairman, Intern Committee, Arnot Ogden Memorial Hospital, Elmira, New York. D

WANTED—AVAILABLE IMMEDIATELY; TWO GENeral practice residencies for 1 year; salary $411 per month; residencies approved by AMA and by Veterans Administration for training; requirements: U. S. citizenship and California license. Apply: General Hospital of Riverside County*+, Arlington, California. D

NEUROSURGICAL RESEARCH RESIDENCY FELLOWship—now available; coordinated with approved 4 year neurosurgical residency program; advanced graduate degree obtainable. Department of Neurological Surgery, Medical College of Virginia, Richmond, Virginia. D

**SURGICAL RESIDENTS—APPROVED; GENERAL 312 bed hospital*+; 2 1st year residencies available; active teaching program; stipend, $275 per month, plus room, board and laundry. Apply: Stephen B. Fuller, St. Luke's Hospitals, Milwaukee, Wisconsin. D**

AMA APPROVED INTERNSHIP—ROTATING SERVice; 370 bed hospital*; 35 minutes to metropolitan area; salary $300 plus maintenance; furnished apartment. Address: Sister Mary Vetusa, Administrator, St. Catherine Hospital, East Chicago, Indiana. D

PATHOLOGY RESIDENCY OR ASSISTANT RESIdency—available immediately to person with previous training in pathology. Address communications to: Dr. Tobias Weinberg, Pathologist-in-Chief, Sinai Hospital*+, Baltimore 5, Maryland. D

THREE MONTHS PLASTIC SURGERY AFFILIATION —open to general surgical residents desiring additional training in this field. Contact: Mrs. Byrnece Freeburn, Administrator, Straith Memorial Hospital, 2605 W. Grand Boulevard, Detroit 8, Michigan. D

VACANCIES FOR RESIDENT PSYCHIATRISTS — IN State School for mental defectives; $5400 1st year; $6020 2nd year; must be eligible to obtain license in New York State. For information write: Director, Wassaic State School, Wassaic, New York. D

NEED RESIDENT IN GENERAL PRACTICE — IMmediately and January 1957; training program approved by AMA; 158 bed hospital+ with closed staff; fully accredited by joint commission. Apply: Administrator, Nan Travis Memorial Hospital, Jacksonville, Texas. D

RESIDENCY IN GENERAL SURGERY — APPROVED for 3 years training, 325 bed university affiliated hospital*+; available immediately. Apply: Administrator, Evanston Hospital Association, Evanston, Illinois. D

**OPHTHALMOLOGY RESIDENCIES — IMMEDIATE openings; large university teaching hospital*+, located in middle Atlantic state; excellent training program; active service. Box 1917 D, % AMA.**

FULLY-APPROVED RESIDENCIES — IN GENERAL surgery, internal medicine, obstetrics and gynecology. Contact: Director of Medical Education, Highland Park General Hospital,*+ Detroit 3, Michigan. D

APPROVED PATHOLOGY RESIDENCY—JANUARY 1, 1957; 200 bed San Francisco bay area hospital+; $350 to $550 monthly. Box 1879 D, % AMA.

**RESIDENCIES—MENNINGER SCHOOL OF PSYCHIAtry+; approved 3 year program; balanced clinical and didactic training including psychotherapy and somatic therapies, outpatient and child psychiatry; at VA, State and Menninger hospitals; affiliated with Topeka Institute for Psychoanalysis; 5 year appointments combining residency and staff experience for Board eligibility available at staff salaries. Write: Registrar, Menninger School of Psychiatry, Topeka, Kansas. D**

PATHOLOGY RESIDENCY—APPROVED 4 YEARS IN pathologic anatomy and clinical pathology available September 1, 1956; program directed by 3 certified pathologists; 8000 surgical tissues, 325 autopsies and 130,000 clinical tests annually; $250 per month plus maintenance. Apply: C. Allen Payne, MD, Director of Laboratories, Blodgett Memorial Hospital,*+ Grand Rapids, Michigan. D

APPROVED RESIDENCIES—VA HOSPITAL,+ HOUSton Texas; integrated training programs, Baylor University Affiliated Hospitals residencies, Texas Medical Center; applications accepted for neurology, pathology, physical medicine, psychiatry, radiology and urology; "Career" residencies in neurology, psychiatry and physiatry; citizenship required. Manager, VA Hospital, or Dean, Baylor University College of Medicine. D

**INTERNSHIP APPOINTMENTS—12 MONTHS ROTATing; wanted immediately; 390 beds and 45 bassinets; over 42% of medical staff Board certified specialists; full laboratory facilities with approved use of radioactive iodine phosphorous, AU 198; approved residency program in urology, surgery, medicine, OB-GYN; $300 per month. Administrator, Orange Memorial Hospital+, Orlando, Florida. D**

THREE RESIDENCY APPOINTMENTS IN ANESTHEsia—beginning January 1, 1957; for qualified graduates of grade A medical schools eligible for Ohio State Board examinations. Interested applicants write to: Robert A. Hingson, MD, Director, Department of Anesthesia, University Hospitals of Cleveland, 2065 Adelbert Road, Cleveland 6, Ohio. D

MEDICAL RESIDENCY—ONE YEAR, BOARD APproved; experience in hematology, clinical use of isotopes, oral endoscopy, chemotherapy of neoplasia, and general medicine; salary $300 per month. Write to: Dr. C. D. Howe, Chief of Medicine, The University of Texas M.D. Anderson Hospital and Tumor Institute,+ Houston, Texas. D

**PATHOLOGY RESIDENCY — FIRST OR SECOND year; Four year approval pathologic anatomy and clinical pathology; 700 bed general hospital *+; must be U. S. citizen; California license or eligible; $300 monthly, full maintenance. Write: Pathologist, Sacramento County Hospital, 2315 Stockton Boulevard, Sacramento 17, California. D**

RADIOLOGY RESIDENCY—AVAILABLE IN NEW 800 bed general hospital*+; teaching hospital unit, new medical school department of radiology; appointments made for 3 years in a service covering diagnosis, therapy, radium, and isotopes. Address: Director, Department of Radiology, Parkland Memorial Hospital, Dallas, Texas. D

PATHOLOGY RESIDENCIES—UNIVERSITY OF KANsas Medical School*+ and VA Hospital; 4 year program available for certification, 1 year program for residents other specialties; 12 full time staff pathologists; U. S. citizens preferred. Apply: Dr. R. E. Stowell, Kansas City 12, Kansas. D

UNEXPECTED VACANCY IN FIRST YEAR OF THREE year approved psychiatric residency program; supervised work on inpatient service; active teaching; $4500 plus single maintenance. Contact: M. Rosenberg, MD. Office of Medical Education, Philadelphia General Hospital,*+ Philadelphia, Pennsylvania. D

WANTED—RESIDENTS IN PHYSICAL MEDICINE and rehabilitation; approved residents must be graduates of approved schools; chronic disease hospital+, 810 beds. Apply: Arthur Feigenbaum, Superintendent, Jewish Chronic Disease Hospital, 86 East 49th Street, Brooklyn 3, New York. D

**BOARD APPROVED PSYCHIATRIC TRAINING—EClectic approach including analytic supervision; 68 beds+ OPD adult and child, 8 patients average load; medical school*+ basic affiliation, 14 Diplomate staff; Mid-West; salary $4200 to $5400 plus quarters; reply biographic facts. Box 1887 D, % AMA.**

GENERAL PRACTICE ROTATING RESIDENCIES—available July 1, 1956; salary $385 per month; must be citizen; 100 bed hospital; well-equipped and with full accreditation of Joint Commission. Write: Administrator, Tulare County General Hospital,+ Tulare, California. D

RESIDENT PATHOLOGIST—POSITION AVAILABLE immediately; $150 per month, plus full maintenance; fully approved in pathologic anatomy, clinical pathology, surgical pathology and forensic pathology. Write to: Dr. G. R. Hennigar, Medical College of Virginia,*+ Richmond, Virginia. D

ANESTHESIOLOGY RESIDENCIES—AT UNIVERSITY of Minnesota Hospitals, Minneapolis Veterans Administration Hospitals and associated hospitals; an opening every 4 weeks. Address: Frederick H. Van Bergen, MD, Director of Anesthesiology, University of Minnesota Hospital, Minneapolis, Minnesota. D

OTOLARYNGOLOGY RESIDENCY — IMMEDIATELY available; appointment for 1st, 2nd or 3rd year resident; at Veterans Research Hospital,+ Northwestern University; only U. S. citizen eligible. Apply to: Dr. G. E. Shambeaugh Jr., 55 E. Washington St., Chicago 2, Illinois. D

PSYCHIATRIC RESIDENCY—SEVERAL OPENINGS July 1957; for beginning or advanced training approved 3 year program. Department of Psychiatry, U.C.L.A. Medical Center,*+ Los Angeles 24, California. D

WANTED — RESIDENT IN RADIOLOGY; 3 YEAR approval in a mid-western hospital+ and clinic; excellent opportunity; starting salary is $300 a month including meals. Box 1862 D, % AMA.

*(Continued on page 90)*

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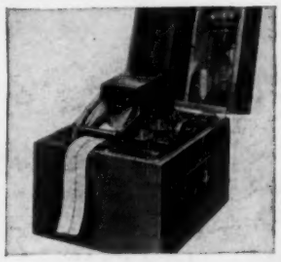

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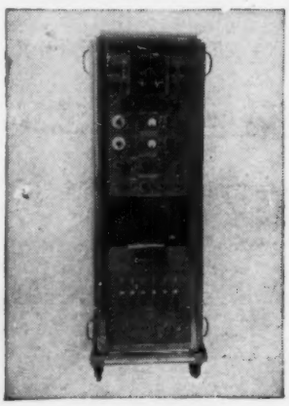

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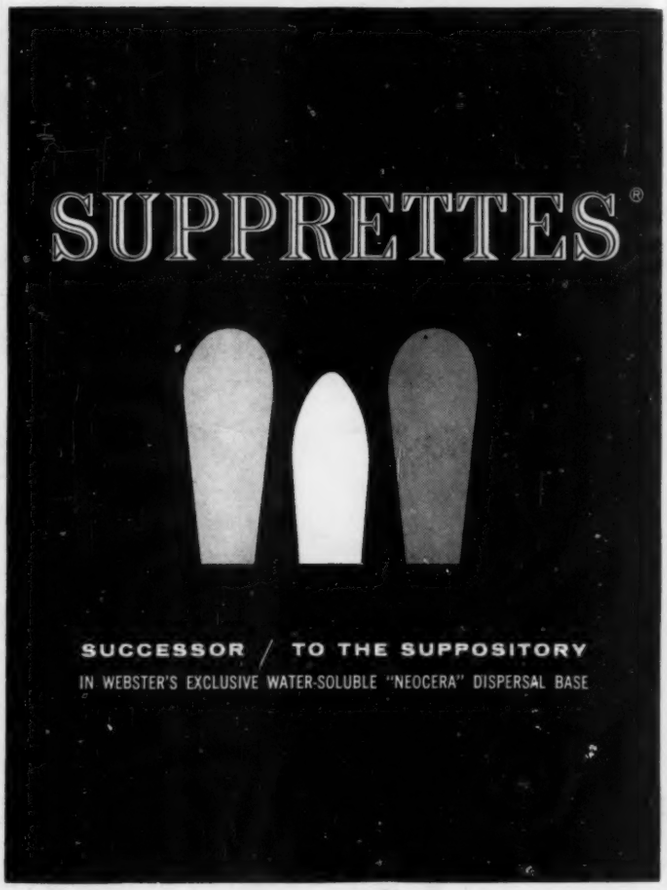


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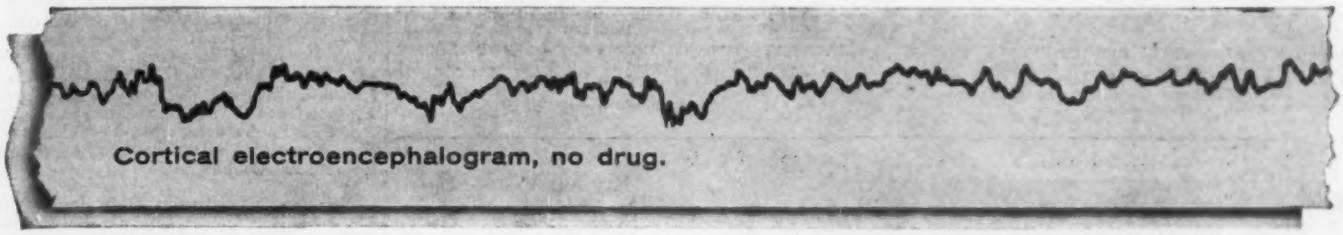
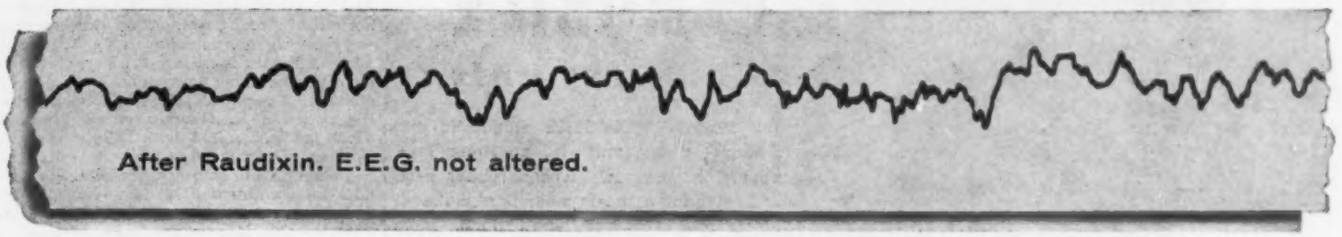
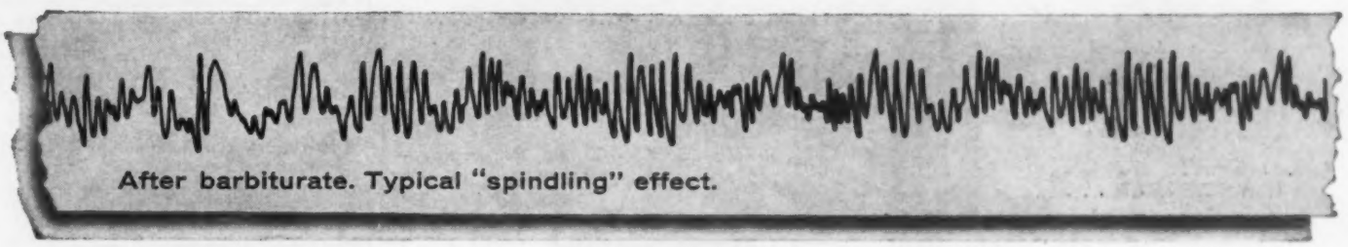


Cortical electroencephalogram, no drug.



After Raudixin. E.E.G. not altered.

Raudixin acts in the area of the midbrain and diencephalon and does not depress the cerebral cortex, as can be seen in this electroencephalogram. Consequently, the tranquilizing effect of Raudixin is generally free of loss of alertness.



After barbiturate. Typical "spindling" effect.

Because barbiturates and other sedatives depress the cerebral cortex, as indicated by this "spindling," the sedation is often accompanied by a reduction in mental alertness.

# RAUDIXIN

SQUIBB WHOLE ROOT RAUWOLFIA SERPENTINA

SQUIBB

**DOSAGE:** Usual initial dosage is 200 mg. daily. Maintenance dosage may be adjusted within a range of 50 mg. to 500 mg. daily, depending on the response observed and the possible appearance of side effects. Most patients can be adequately maintained on 100 mg. to 200 mg. per day. Because of its sustained action, Raudixin may be given in single daily doses if desired. *Note:* Tranquilizing action is usually evident in 3 to 10 days; for a more rapid onset of effect, the patient may be given a priming dose of 200 to 300 mg. twice daily for the first 3 days.

**SUPPLY:** 50 mg. and 100 mg. tablets, bottles of 100, 1000 and 5000.

"RAUDIXIN"® IS A SQUIBB TRADEMARK

*(Continued from page 86)*

WANTED—ONCOLOGY RESIDENT; FOR HOSPITAL*+ and tumor Board services starting September 15, 1956; residency is accredited. Reply to: H. M. Kersten, MD, Chairman Tumor Board, Hollywood Presbyterian Hospital, 1322 N. Vermont Avenue, Los Angeles 27, California. D

**IMMEDIATE OPENING GENERAL RESIDENCY—IN small active northern California County general hospital; large clinic; considerable surgery; $7200 per year starting salary, maintenance; California license and citizenship required. Apply: J. W. Randolf, Auburn, California.** D

ANESTHESIOLOGY RESIDENCIES—APPROVED TWO year active teaching program; full maintenance and stipend; 1 year approved internship required. Apply to: Meyer Saklad, MD, Rhode Island Hospital,*+ Providence 2, Rhode Island. D

ASSISTANT RESIDENCY IN OTOLARYNGOLOGY—beginning July 1, 1956; AMA, ACS approved; 45 bed EENT hospital+; salary and maintenance. Apply: Superintendent, McPherson Hospital, Durham, North Carolina. D

OPHTHALMOLOGY RESIDENCY — PRESENTLY available 520 bed teaching hospital*+; affiliated 2 medical schools; fully approved; large out-patient service, along with active in-patient program. Apply: St. Lukes Hospital, Chicago, Illinois. D

FIRST AND SECOND YEAR APPROVED RESIDENcies available—beginning stipend $200 and $225 with full maintenance. Write: Administrator, Hollywood Presbyterian Hospital,*+ 1322 N. Vermont Ave., Los Angeles 27, California. D

RESIDENT PHYSICIAN—117 BED GENERAL HOSpital; $300 per month plus maintenance; must be graduate AMA approved school; general services; September 1956. Apply: Administrator, The Valley Hospital, Ridgewood, New Jersey. D

CHICAGO EYE, EAR, NOSE AND THROAT HOSPItal+—has openings for resident in otolaryngology; offering instruction, full maintenance, and salary; Illinois license. 231 W. Washington St., Chicago, Illinois. D

PEDIATRIC RESIDENTS—2 YEAR RESIDENCY, 400 bed hospital*+ and large out-patient clinic affiliated with medical school. Apply: Director, Mount Sinai Hospital, 2755 W. 15th St., Chicago 8, Illinois. D

### LOCUM TENENS WANTED

NORTHERN MINNESOTA—ONE YEAR; LARGE GENeral and surgical practice in community with modern hospital; located in lovely recreational area of state; possibility of purchase later. Box 1523 G, % AMA.

WE HAVE TWO POSITIONS OPEN—ONE FOR LOCUM tenens and the other position for 1 or 2 years. 200 Republic Building, Cleveland 15, Ohio. G

*(Continued on page 91)*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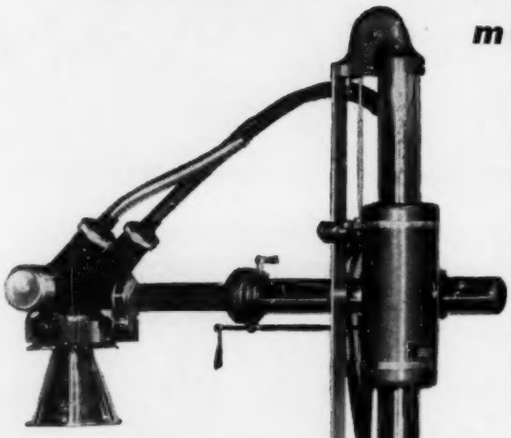

The Mattern FLEXMOBILE diagnostic and therapy x-ray unit is a streamlined beauty. Its compactness and rubber tired ball bearing wheel mounting make it ideal for effortless mobility. It is a flexible, multiple use unit that offers an extensive range of radiographic technics; is completely safe and shockproof.

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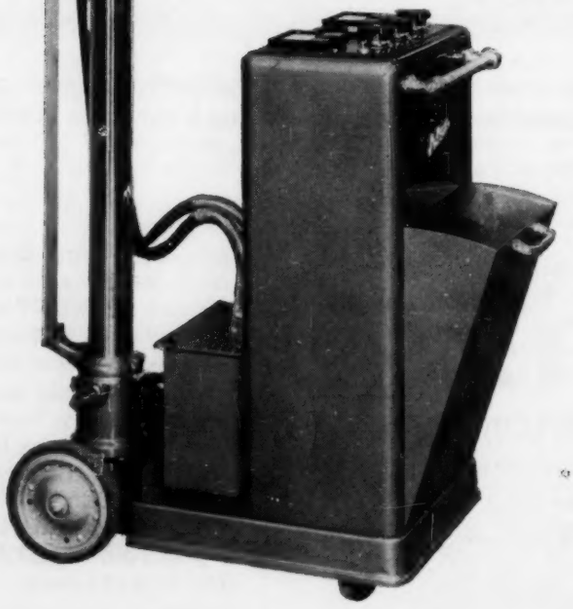

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***manufacturers of specialized electronic equipment***


## BOOKS RECEIVED

*Books received by* THE JOURNAL *are acknowledged in this column. Selections will be made for more extensive review in the interests of* THE JOURNAL *readers as space permits. Books listed in this department are not available for lending or sale through the American Medical Association.*

**Angiocardiographic Interpretation in Congenital Heart Disease.** By Herbert L. Abrams, M.D., Assistant Professor of Radiology, Stanford University School of Medicine, San Francisco, and Henry S. Kaplan, M.D., Professor of Radiology, Stanford University School of Medicine. Publication number 279, American Lecture Series, monograph in Bannerstone Division of American Lectures in Pediatrics. Edited by John A. Anderson, M.D., Professor and Head, Department of Pediatrics, School of Medicine, University of Minnesota, Minneapolis. Cloth. $11.75. Pp. 233, with 163 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1956.

**Röntgendiagnostik des Hüftgelenks.** Von Prof. Dr. med. R. Glauner, Chefarzt der Röntgen- und Radiumabteilung am Marienhospital Stuttgart und Doz. Dr. med. habil. W. Marquardt, leitender Arzt der orthopädischen Klinik "Paulinenhilfe" Stuttgart. Archiv und Atlas der normalen und pathologischen Anatomie in typischen Röntgenbildern. Ergänzungsband 77, Fortschritte auf dem Gebiete der Röntgenstrahlen und der Nuklearmedizin: Diagnostik, Physik, Biologie, Therapie. Herausgeber: R. Glauner et al. Cloth. $13.65; 51.30 marks. Pp. 168, with 195 illustrations. Georg Thieme, Herdweg 63, (14a) Stuttgart N (American zone), Germany; [agents in U. S. A. and Canada—Intercontinental Medical Book Corporation, 381 Fourth Ave., New York 16], 1956.

**Contemporary Psychotherapists Examine Themselves: An Evaluation of Facts and Values Based upon Guided Interviews with Forty-three Representatives of Various Schools.** By Werner Wolff, Ph.D., Professor of Psychology, Bard College, Annandale-on-Hudson, New York. Publication number 264, American Lecture Series, monograph in Bannerstone Division of American Lectures in Psychology. Edited by Molly Harrower, Ph.D., Research and Consulting Psychologist, New York. Cloth. $6.75. Pp. 299, with 1 illustration. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1956.

**Das Hirntrauma: Beiträge zur Behandlung, Begutachtung und Betreuung, Hirnverletzter.** Herausgegeben im Auftrag der Arbeitsgemeinschaft für Hirntraumafragen von Dr. med. E. Rehwald. Neue Folge Heft 59, Arbeit und Gesundheit, sozialmedizinische Schriftenreihe aus dem Gebiete des Bundesministeriums für Arbeit. Herausgegeben von Prof. Dr. phil. et med. M. Bauer, Dr. med. F. Paetzold, Ministerialräten a. D. des Bundesministeriums für Arbeit, und Ministerialrat Dr. med. Cl. Dierkes. Cloth. 44 marks; $10.50. Pp. 527, with 106 illustrations. Georg Thieme Verlag, Herdweg 63, (14a) Stuttgart N (American zone), Germany; [Intercontinental Medical Book Corporation, 381 Fourth Ave., New York 16], 1956.

**Die Chirurgie des Herzens und der grossen Gefässe: Anatomie, Physiologie, Entwicklungsgeschichte, Pathologie, pathologische Physiologie, Klinik, Diagnose und operative Behandlung.** Von Prof. Dr. Emil Karl Frey, Direktor der chirurg. Klinik der Universität München, und Dr. Georg Kuetgens, Assistent der Chirurg. Klinik der Universität München. 61. Band, Neue deutsche Chirurgie. Begründet von P. v. Bruns. Herausgegeben von Hermann Krauss. Second edition. Cloth. 109 marks. Pp. 444, with 244 illustrations. Ferdinand Enke Verlag, Hasenbergsteige 3, (14a) Stuttgart-W., Germany, 1956.

**Angiographie und Klinik: Technik, Indikationen, klinische Bedeutung sowie Fehler und Gefahren der Arteriographie und Phlebographie.** Von Rainer Gottlob, Facharzt für Chirurgie, I. Assistent an der chirurgischen Abteilung des Kaiser-Franz-Josef-Spitals, Wien. Band XII, Wiener Beiträge zur Chirurgie. Begründet von Professor Dr. Rudolf Demel. Paper. $4.56. Pp. 93, with 51 illustrations. Verlag für medizinische Wissenschaften Wilhelm Maudrich, Spitalgasse 1b, Vienna IX, Austria; [Intercontinental Medical Book Corporation, 381 Fourth Ave., New York 16], 1956.

**Human Perspiration.** By Yas Kuno, M.D. Publication number 285, American Lecture Series, monograph in Bannerstone Division of American Lectures in Physiology. Edited by Robert F. Pitts, M.D., Ph.D., Professor of Physiology and Biophysics, Cornell University Medical College, New York. Cloth. $9.50. Pp. 416, with 76 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, Canada, 1956.

**Ankylosing Spondylitis: Clinical Considerations, Roentgenology, Pathologic Anatomy, Treatment.** By J. Forestier, M.D., F.A.C.R., F. Jacqueline, M.D., and J. Rotes-Querol, M.D. Translated by A. U. Desjardins, M.S., M.D., F.A.C.P. [from La spondylarthrite ankylosante, Masson, 1951.] Cloth. $10.75. Pp. 374, with 145 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1956.

**Health Observation of School Children: A Guide for Helping Teachers and Others to Observe and Understand the School Child in Health and Illness.** By George M. Wheatley, M.D., M.P.H., Third Vice-President, Health and Welfare, Metropolitan Life Insurance Company, and Grace T. Hallock. Second edition. Cloth. $6.50. Pp. 488, with 86 illustrations by Barbara Pfeiffer. Blakiston Division, McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36; 95 Farringdon St., London, E.C.4, England, 1956.

**Oral Cancer and Tumors of the Jaws.** By George S. Sharp, M.D., F.A.C.S., F.A.C.R., Professor of Pathology, School of Dentistry, University of Southern California, Weldon K. Bullock, M.D., M.Sc., Associate Clinical Professor of Pathology, School of Medicine, University of Southern California, Los Angeles, and John W. Hazlet, D.D.S. Cloth. $15. Pp. 561, with illustrations. Blakiston Division, McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36; 95 Farringdon St., London, E.C.4, England, 1956.

**Der Fersenschmerz: Funktionelle und organische Störungen im Bereich der Ferse und Achillessehne.** Von Prof. Dr. med. Kurt Stucke, Oberarzt der Chirurg. Univ.-Klinik Würzburg. Mit einem Geleitwort von Prof. Dr. med. Werner Wachsmuth, Direktor der chirurg. Univ.-Klinik Würzburg. Cloth. 29.70 marks; $7.10. Pp. 163, with 68 illustrations. Georg Thieme Verlag, Herdweg 63, (14a) Stuttgart N (American Zone), Germany; [Intercontinental Medical Book Corp., 381 Fourth Ave., New York 16], 1956.

**The Proceedings of the Fifth Middle East Medical Assembly held on April 22, 23, 24, 1955.** Under distinguished patronage of His Excellency the President of Lebanese Republic, Camille Chamoun, in West Hall, American University of Beirut. Sponsored by Medical School and Medical Alumni Association of American University of Beirut. Originally published in Lebanese Medical Journal, Vol. VIII, nos. 2, 3, 4 and 5, 1955. Paper. Pp. 105-564, with illustrations. [Beirut, Lebanon, n.d.]

**Undersøgelser over hud- og muskeltemperaturen efter tetraaetylammonium-injektion samt over muskeltemperaturen under arbejde hos patienter med perifere arterielle sygdomme.** [By] H. E. Leschly Jacobsen. [Studies of Skin and Muscle Temperature after Injection of Tetraethylammonium and of Muscle Temperature During Work in Patients with Peripheral Arterial Diseases. Thesis, M.D., Copenhagen University, 1955.] With English summary. Paper. Pp. 166, with 23 illustrations. Christreus bogtrykkeri, Copenhagen, Denmark, 1956.

**Chirurgie der grossen Körpervenen.** Von Prof. Dr. med. R. Wanke, Direktor der chirurgischen Universitätsklinik Kiel, in Gemeinschaft mit Prof. Dr. med. H. Junge, Oberarzt der Klinik, und Doz. Dr. med. H. Eufinger, Oberarzt der Poliklinik, und mit einem Beitrag von Prof. Dr. med. H. Kalk. Cloth. 27 marks; $6.40. Pp. 139, with 71 illustrations. Georg Thieme Verlag, Herdweg 63, (14a) Stuttgart N (American zone), Germany; [Intercontinental Medical Book Corp., 381 Fourth Ave., New York 16], 1956.

**Fisio-patologia del complesso ungueale.** Dal Dott. Paolo Sertoli, libero docente. Paper. 3500 lire. Pp. 339, with 143 illustrations. Edizioni Minerva medica, Corso Bramante 83 (Casella postale 491) Torino 314, Italy, 1956.

*(Continued on page 94)*

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Indicated
in most condi-
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cortisone or hydrocortisone
is effective. Available in 2.5 mg.
tablets in bottles of 100, and in 5 mg.
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Usual dosage is ½ to 1 tablet three or four
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Deltasone*
Less sodium retention, less potassium depletion

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*(Continued from page 90)*

## LOCUM TENENS WORK WANTED

LOCUM TENENS WORK — OR AS ASSISTANT BY October, November, December, 1956; by 28 year old physician with three years orthopedic residency completed. Box 1907 H, % AMA.

## SITUATIONS WANTED

CHEST PHYSICIAN—40; FAMILY; DESIRES POSITION as assistant medical director or staff physician modern tuberculosis hospital, Mid-West; well-trained in pulmonary diseases; experience: 3 year residency pulmonary diseases large metropolitan tuberculosis hospital; 2½ years superintendent and medical director of medium-sized tuberculosis hospital; desires position with full-time medical responsibility and minimum adminstrative duties. Bx 1902 I, % AMA.

GENERAL PRACTITIONER—WANTS EMPHASIS ON OB-GYN; in Mid-West; 32; married; family; Northwestern graduate; OB-GYN residency, 2 years general practice. Box 1912 I, % AMA.

INTERNIST—35; MARRIED; PART I BOARDS; VA training, university affiliated; licensed Minnesota (graduate) Missouri; clinic experience; completing military service; available January, 1957; clinic or group association desired; South, Mid-West, or West. Box 1708 I, % AMA.

GENERAL PRACTITIONER—27; SINGLE; COMPLETing military service, January, 1957; desires solo practice, or association with individual or small group in New Jersey area; interested in permanent location; A medical school. Box 1908 I, % AMA.

INTERNIST-GASTROENTEROLOGIST — 31; THREE years subspecialty experience including gastroscopy; completed part I American Board; considerable research experience; clinical appointment with research facilities; desired in fall. Box 1704 I, % AMA.

DENTIST — NINE YEARS EXPERIENCE IN RESearch, writing, editing, and teaching; desires opportunity in research, or writing, or teaching, or administrative (or combination) capacity; 33; family. Box 1654 I, % AMA.

GENERAL PRACTICE ASSISTANT—30; CATEGORY IV; (WWII). NYU, 1955; 1 year rotating internship; National Boards and New York license; start immediately $1000 monthly or equivalent room and board. Box 1916 I, % AMA.

OPHTHALMOLOGIST—UNIVERSITY TRAINED; COMpleting residency; wishes opportunity for solo practice or partnership in New Jersey, New York or New England; married; veteran; age 30. Box 1709 I, % AMA.

**RADIOLOGIST—33; BOARD CERTIFIED; VETERAN; desires association individual, group or hospital; New York State, preferably metropolitan New York or suburbs; can invest; details 1st letter. Box 1913 I, % AMA.**

*(Continued on page 92)*

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SINCE 1902

*(Continued from page 91)*

ANESTHESIOLOGIST — BOARD QUALIFIED; 31 years old; married; 3 children; no military obligation; desires solo or partnership fee-for-service practice vicinity New York City. Box 1914 I, % AMA.

WANTED—INDUSTRIAL LOCATION; THIS COUNTRY or abroad; 20 years experience heavy construction, World War II, and mining industry; available in October. Box 1892 I, % AMA.

RADIOLOGIST—35; BOARD CERTIFIED; QUALIFIED isotopes and cobalt therapy; now in teaching institution; category IV; prefer radiology group, clinic, or hospital in West. Box 1900 I, % AMA.

ORTHOPEDIST—32; UNIVERSITY TRAINED; PART I and military service completed; desires association with 1 or more orthopedists; east coast area preferred; no groups. Box 1901 I, % AMA.

UROLOGIST—35; CATEGORY IV; FAMILY; BOARD eligible; desires association with older established urologist. Box 1651 I, % AMA.

**GENERAL SURGEON—39; 6 YEARS PRIVATE PRACtice; 3 years chief surgeon community hospital; Harvard graduate; university training; teaching experience; certified; seeks situation either coast or mountain area, preferably with another surgeon or group in stimulating and congenial atmosphere. Box 1854 I, % AMA.**

ANESTHESIOLOGIST — BOARD ELIGIBLE; 39; family; training and experience also in surgery and general practice; desire opportunity to combine practice in Anesthesia with some general practice; Diplomate of National Board of Medical Examiners; available January 1, 1957. Box 1818 I, % AMA.

GENERAL PRACTITIONER — 31; FAMILY; WELL-trained obstetrics, some surgery, and trauma; National Boards; desires permanent, progressive association in small to medium sized town with hospital. Box 1824 I, % AMA.

WHEN IN NEED OF AMERICAN BOARD SPECIALists to head departments, physicians for private practice, public health or industry, please write for recommendations. Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago. I

AVAILABLE—AMERICAN BOARD SPECIALISTS TO head departments, join groups, etc.; physicians for private practice, assistants or associates, industry, public health. Please write for recommendations. Shay Medical Agency, 55 E. Washington, Chicago. I

GENERAL SURGEON — 32; BOARD CERTIFIED; family; university trained; private practice; vascular and traumatic experience; completing military obligation; desire association with individual or group; Diplomate National Boards. Box 1797 I, % AMA.

GENERAL SURGEON—BOARD CERTIFIED; DIPLOmate National Boards; age 35; extensive tumor training on teaching staff large eastern hospital; desires location or association with individual or group. Box 1810 I, % AMA.

**RADIOLOGIST — BOARD CERTIFIED; ASSOCIATE professor in mid-west medical school; considerable experience in hospital radiology; desires responsible hospital position. Box 1822 I, % AMA.**

INTERNIST—32; FAMILY; BOARD ELIGIBLE; DEsires association with another internist or group; prefers Southeast or Coastal location; 1 year group practice experience. Box 1825 I, % AMA.

GENERAL SURGEON—AGE 34; VETERAN; BOARD qualified; desires association with established surgeon or clinic; location: east of the Rockies. Box 1877 I, % AMA.

GENERAL SURGEON—33; MARRIED WITH FAMILY; passed I American Board Surgery; leaving service January, 1957; desires association with individual or group. Box 1885 I, % AMA.

ANESTHESIOLOGISTS—BOARD CERTIFIED; WILL consider fee for service or hospital positions. Box 1812 I, % AMA.

BOARD QUALIFIED GENERAL SURGEON—DESIRES location. Box 1839 I, % AMA.

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**WANTED—(a) CHIEF MED TECH; fully apprv'd vol gen hosp 400 bds; Ige indus city fairly close to NYC. (b) MED TECH; 30 bd gen hosp; $400; meals; sm twn; Alaska. (c) MED TECH; 3 techs now in active lab supv by Board path; gen hosp 120 bds; about $400; resid twn 20,000; MW. (d) LAB & X-RAY TECH; 30 bd gen hosp; excel lab & x-ray equip; popular resort twn, Fla. (e) CHIEF MED TECH; apprv'd gen hosp 100 bds; $400 or better; lovely coll comm 15,000; MidE. (f) MED TECH; vol gen hosp 130 bds; sm cty seat twn; to $350; Carolinas. (g) X-RAY TECH; 120 bd gen hosp; well known resort city 10,000; SW. (h) MED TECHS; vol gen hosp 200 bds, apprv'd JCAH; lovely N. Engl. city 50,000. (i) MED TECH; pref reg'd; vol gen hosp 75 bds; $4200, full mtce; resid suburb Ige univ med ctr; MW. (j) CHIEF MED TECH; 2 other techs in active lab, gen hosp 100 bds; to $375, rapid increase; twn 20,000; SW. Woodward Medical Personnel Bureau, 185 N. Wabash, Chicago. L**

PHYSIOTHERAPIST—WANTED AT ONCE; ONE MALE and one female physiotherapist; graduates of recognized school; particularly those experienced in massage; for full time work at Aspen Health Center, Aspen, Colorado; applicants should be under 30 years of age and interested in various types of outdoor athletics. Reply direct to: Bruno Geba, Aspen Health Center, giving full details of training etc. L

LABORATORY TECHNICIAN—169 BED HOSPITAL*; 7 technicians MT (ASCP) (or eligible) approved laboratory school; full maintenance if desired; night and weekend call with generous remuneration; 3 weeks vacation; sick leave; salary open. Dr. Robert A. Fox, Northern Westchester Hospital, Mount Kisco, New York. L

MEDICAL LABORATORY TECHNOLOGISTS—THREE; ASCP registered, or eligible; experienced in hematology, basic biochemistry and blood banking; for 350 bed general hospital*+ in Connecticut; must be interested in instructing students; also opening for experienced tissue technologist. Box 1895 L, % AMA.

PHYSIOTHERAPIST — FULLY QUALIFIED FEMALE to work full time; private orthopedic practice. Reply to: Peter J. Dulligan, MD, 773 Teaneck Road, Teaneck, New Jersey. L

CYTOLOGISTS WANTED — FOR CANCER SURVEY project by U. S. Public Health Service; salary $3415 or $3670 depending on qualifications; salary during 6 month training period for medical technicians, inexperienced in cytology, is $3175. For further information and application write to: Dr. E. von Haam, Ohio State University, Columbus, Ohio. L

**REGISTERED LABORATORY TECHNICIAN — MAJOR oil company in progressive southwestern community of 25,000 has opening for female registered laboratory technician for complete clinical laboratory; 40 hour work week; excellent employee benefits; give education experience, and salary requirements, in initial letter. Box 1792 L, % AMA.**

WANTED—LABORATORY TECHNICIAN; LICENSED or qualified; 75 bed general hospital; pathologist directed laboratory; pleasant rural community of 10,000; $325-$375 plus calls. Write: Miss Lucille Mahone, Chief Technician, Watsonville Community Hospital, Watsonville, California. L

FEMALE LABORATORY AND X-RAY TECHNICIAN—for doctor's office; salary open. 5153 N. Clark St., Chicago, Illinois. L

**WANTED—(a) CHIEF OF LAB; small gen. hosp; highly qual. reg. tech or Ph.D., Chemistry; sal. for tech. $6000, for Ph.D., $8000; near Chicago. (b) TWO REG. TECHS; small gen. hosp., well-equipped; air-conditioned; college town, San Francisco area; min. $340. (c) X-RAY TECH; woman pref; group ass'n, Alaska; $500 month; transportation on yr. contract. (d) BIOCHEMIST; to direct chemistry dept, 300 bed gen. hosp; vic. N.Y.C. (e) MICROBIOLOGY (Bact) tech to assist, research program in allergy, univ. med. school; Mid. So. (f) HISTOLOGIST; Ige. indus. co; Chicago. (g) REG. TECH; new air-conditioned indus. lab supervised by Ph.D; Texas. (h) TISSUE TECH to take charge of tissue lab; new lab. dept, 300 bed hosp; Ohio. Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago. L**

## HOSPITALS AND SANATORIA FOR SALE

LICENSED PSYCHIATRIC HOSPITAL—SUBURBS OF rapidly growing city, Southwest; 50 beds; fireproof, 1 story; ample grounds, well landscaped; operating now 50 to 75% capacity; "In the black"; good opportunity for psychiatrist, or other physician or surgeon interested in running his "own show." Box 1803 O, % AMA.

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*(Continued on page 102)*

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*Caution: This picture is not intended as a guide to the selection of mushrooms. No one should pick mushrooms for the table unless his eyes are discriminative and his knowledge faultless.*

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Fig. 231

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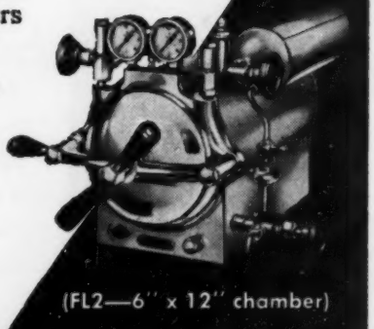

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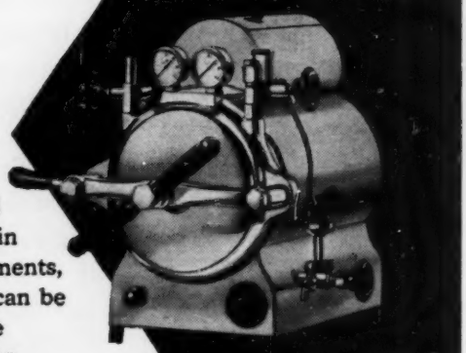

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†*"The Management of Viral Hepatitis," by Hyman J. Zimmerman, M. D., Journal of American Academy of General Practice, June 1955*

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**The Morphology of Human Blood Cells.** By L. W. Diggs, M.A., M.D., Professor of Medicine and Director of Medical Laboratories, University of Tennessee and City of Memphis Hospitals, Memphis, Dorothy Sturm, Instructor, Memphis Academy of Arts, and Ann Bell, B.A., Instructor in Medicine, University of Tennessee. Cloth, loose-leaf. $12. Pp. 181, with 54 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, England, 1956.

**Proceedings of the Round Table on Lysergic Acid Diethylamide and Mescaline in Experimental Psychiatry Held at the Annual Meeting of the American Psychiatric Association, Atlantic City, New Jersey, May 12, 1955.** Edited by Louis Cholden, M.D., Chairman, Assistant Clinical Professor of Psychiatry, University of California Medical School at Los Angeles. Cloth. $3. Pp. 85, with 12 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; 99 Great Russell St., London, W.C.1, England, 1956.

**Traité de technique chirurgicale.** Publié par R. Fey et al. Tome V: Organes génitaux de la femme. Voie abdominale, voie vaginale. Par P. Mocquot, J.-C. Rudler, professeur agrégé à la Faculté de médecine, et R. Palmer, chef des travaux gynécologiques à la Faculté de médecine. Césariennes. Par J. Varangot, professeur à la Faculté de médecine de Paris. Mamelle. Par P. Mocquot et Y.-J. Longuet. Second edition. Cloth. 6300 francs. Pp. 780, with 781 illustrations. Masson & Cie, 120 Blvd. Saint-Germain, Paris, 6e, France, 1956.

**Die äusseren Heilmittel 1950-1955: Ergänzung zur dritten Auflage von Salben-Puder-Externa.** Von Hermann v. Czetsch-Lindenwald, Apotheker, Dr. rer. nat. habil., Wien, und Friedrich Schmidt-La Baume, a.o. Professor, Dr. med. habil., Chefarzt der Hautabteilung des städtischen Krankenhauses Mannheim. Paper. 19.60 marks. Pp. 149, with 10 illustrations. Springer-Verlag, Reichpietschufer 20, (1) Berlin W. 35 (West-Berlin); Neuenheimer Landstrasse 24, Heidelberg; Göttingen, Germany, 1956.

**World Atlas of Epidemic Diseases. Second Part in 4 Issues.** Edited under sponsorship of Heidelberg Akademie der Wissenschaften, by Professor Dr. med. Ernst Rodenwaldt. Assistant scientific editor: Privatdozent Dr. med. habil. Helmut J. Jusatz. In collaboration with Prof. Dr. R.-E. Bader and others. [In German and in English.] Paper, loose-leaf. Various pagination, with 11 maps. Falk-Verlag, Burchardstrasse 8, Hamburg 1, Germany, 1956.

**Clinical Selections in Dermatology and Mycology.** By Frederick Rehm Schmidt, A.B., M.D., Associate Professor of Dermatology, Northwestern University Medical School, Chicago. With contributions by 36 specialists from various lands. Cloth. $10.50. Pp. 505. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1956.

**Galen on Anatomical Procedures: De Anatomicis Administrationibus.** Translation of surviving books with introduction and notes by Charles Singer. Publications of Wellcome Historical Medical Museum, new series, no. 7. Cloth. $8.75; 37s.6d. Pp. 289. Published for Wellcome Medical Museum by Oxford University Press, 114 Fifth Ave., New York 11; Amen House, Warwick Sq., London, E.C.4, England, 1956.

**The Neurosurgical Alleviation of Parkinsonism.** By Irving S. Cooper, M.D., Ph.D., F.A.C.S., Director, Department of Neurosurgery, St. Barnabas Hospital, New York City. Cloth. $8.50. Pp. 104, with 68 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1956.

**The Lung as a Mirror of Systemic Disease.** By Eli H. Rubin, M.D., Professor of Clinical Medicine, Albert Einstein College of Medicine, Yeshiva University, New York. Cloth. $12.50. Pp. 288, with 92 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1956.

*(Continued on page 98)*

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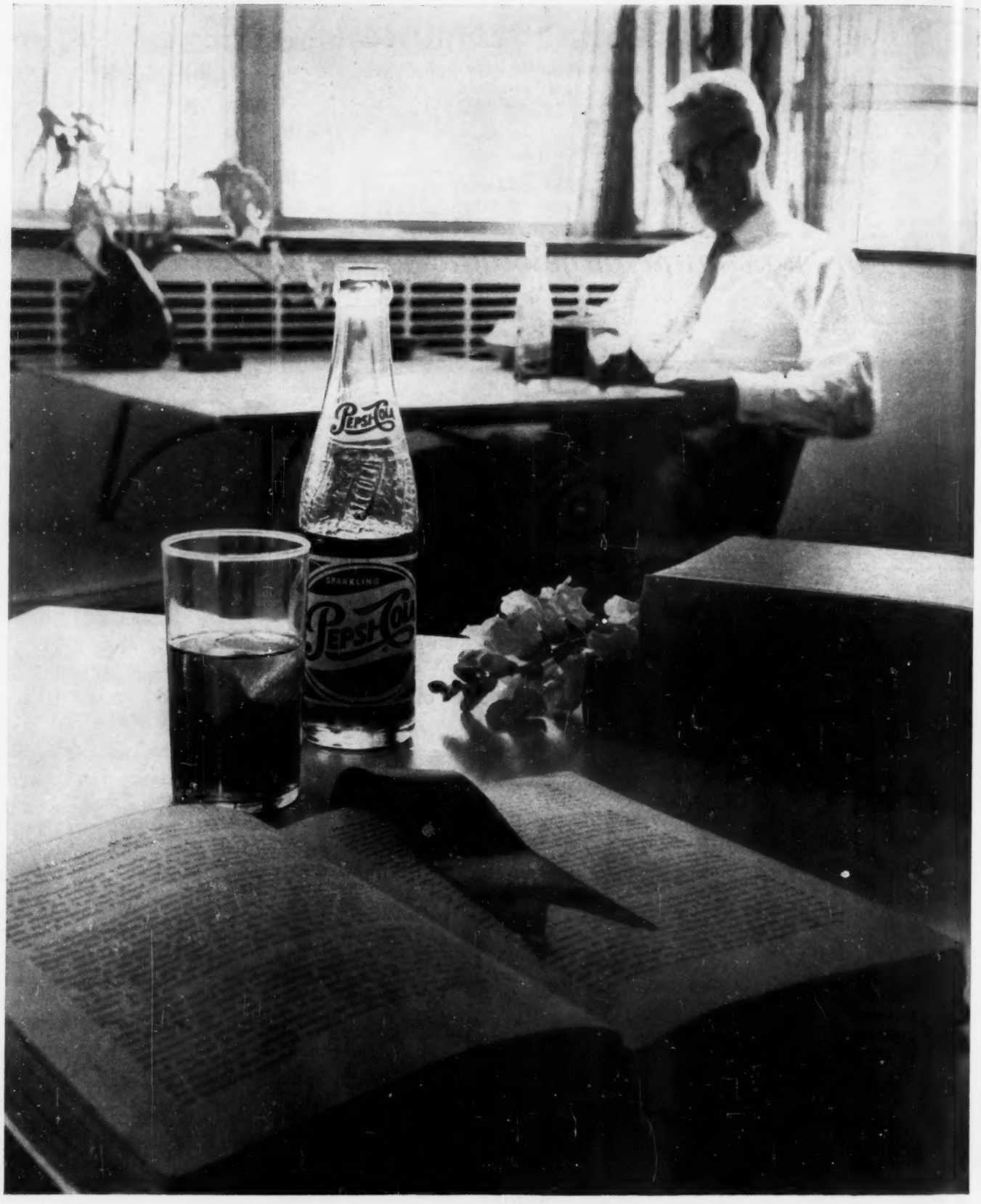


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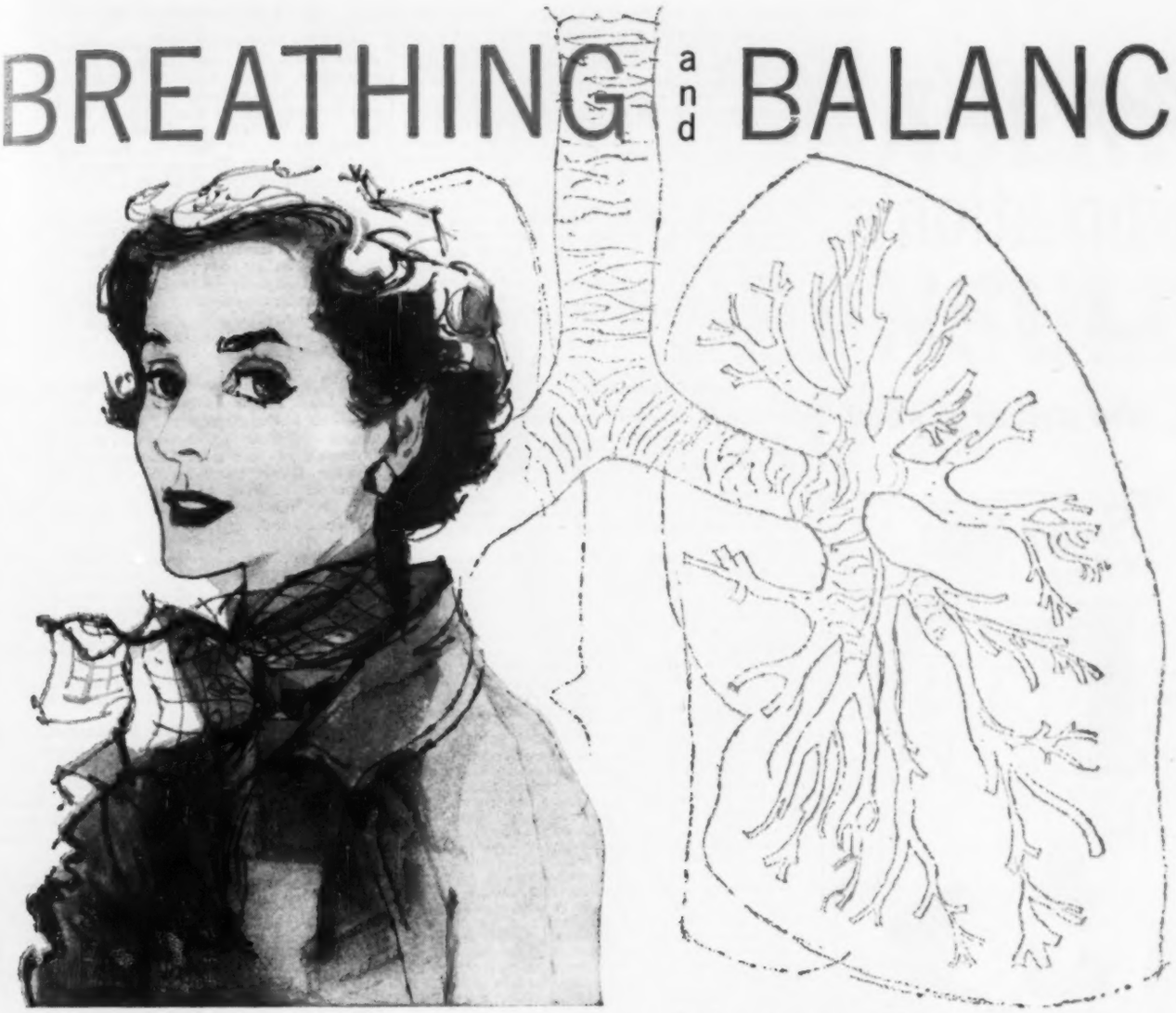

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*Schwartz, E.: New York J. Med. 56:570, 1956.

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608210


*(Books Received Continued)*

**An Atlas Illustrating the Topographical Anatomy of the Head, Neck, and Trunk.** By the late Johnson Symington, M.D., F.R.C.S., F.R.S. Printed and published for Anatomical Society of Great Britain and Ireland. $21. 34 plates, boxed. Oliver & Boyd, Ltd., 39a Welbeck St., London, W.1, England; Tweeddale Ct., 14 High St., Edinburgh 1, Scotland; [Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.], 1956.

**Foundations of Nutrition.** By Clara Mae Taylor, Ph.D., Professor of Nutrition, Teachers College, Columbia University, New York, Grace MacLeod, Ph.D., and the late Mary Swartz Rose. First, second, and third editions under present title and fourth edition under title Rose's Foundations of Nutrition. Fifth edition. Cloth. $6. Pp. 620, with 128 illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1956.

**Cardiac Pressures and Pulses: A Manual of Right and Left Heart Catheterization.** By Aldo A. Luisada, M.D., Associate Professor of Medicine, Chicago Medical School, and Chi Kong Liu, M.D., Instructor of Medicine, Chicago Medical School, Chicago. Cloth. $6. Pp. 116, with 51 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; 99 Great Russell St., London, W.C.1, England, 1956.

**Handbuch der allgemeinen Pathologie.** Herausgegeben von F. Büchner, E. Letterer und F. Roulet. Band 7: Reaktionen. Teil 1: Entzündung und Immunität. Bearbeitet von R. Bieling, W. Ehrich, E. Letterer und F. Roulet. Redigiert von F. Roulet. Cloth. 188 marks. Pp. 742, with 164 illustrations. Springer-Verlag, Reichpietschufer 20, (1) Berlin W. 35 (West-Berlin); Neuenheimer Landstrasse 24, Heidelberg; Göttingen, Germany, 1956.

**Biochemistry of the Eye.** By Antoinette Pirie, M.A., Ph.D., and Ruth Van Heyningen, M.A., D.Phil. Cloth. $7. Pp. 323, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1956.

**The Practice of Psychosomatic Medicine as Illustrated in Allergy.** By Hyman Miller, M.D., Associate Clinical Professor of Medicine, University of California at Los Angeles, Los Angeles, and Dorothy W. Baruch, Ph.D. Cloth. $5. Pp. 196. Blakiston Division, McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36; 95 Farringdon St., London, E.C. 4, England, 1956.

**The Mentally Retarded Patient.** By Harold Michal-Smith, Ph.D., Chief Clinical Psychologist, Flower and Fifth Avenue Hospitals, New York. Cloth. $4. Pp. 203. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; 2083 Guy St., Montreal, Canada; Pitman Medical Publishing Company, Ltd., 39-41 Parker St., Kingsway, London, W.C.2, England, 1956.

**Clinical Studies in Psychiatry.** By Harry Stack Sullivan, M.D. Edited by Helen Swick Perry, Mary Ladd Gawel and Martha Gibbon. With foreword by Dexter M. Bullard, M.D. Prepared under auspices of William Alanson White Psychiatric Foundation, Committee on Publication of Sullivan's Writings. Cloth. $5.50. Pp. 386. W. W. Norton & Company, Inc., 55 Fifth Ave., New York 3, 1956.

**Progress in Hematology. Volume I.** Edited by Leandro M. Tocantins, M.D., with 27 contributors. Cloth. $9.75. Pp. 336, with illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; 99 Great Russell St., London, W.C.1, England, 1956.

**Die Pathologie des kindlichen Pankreas.** Von Dozent Dr. med. Gerhard Seifert, Prosektor am pathologischen Universitäts-Institut, Leipzig. Cloth. 52 marks. Pp. 151, with 109 illustrations. VEB Georg Thieme, Hainstr. 17/19 Aufg. C, Leipzig C1, Germany, 1956.

**Synthetic Ion-Exchangers: Recent Developments in Theory and Application.** By G. H. Osborn, F.R.I.C., Consulting Chemist, Catalin Ltd. Cloth. $6. Pp. 194, with 4 illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1956.

**Cerebral Palsy: Advances in Understanding and Care.** By Viola E. Cardwell, R.N., P.T., M.A. Cloth. $5. Pp. 625, with 81 illustrations. Association for Aid of Crippled Children, 345 East 46th St., New York 17, 1956.

*(Continued on page 108)*

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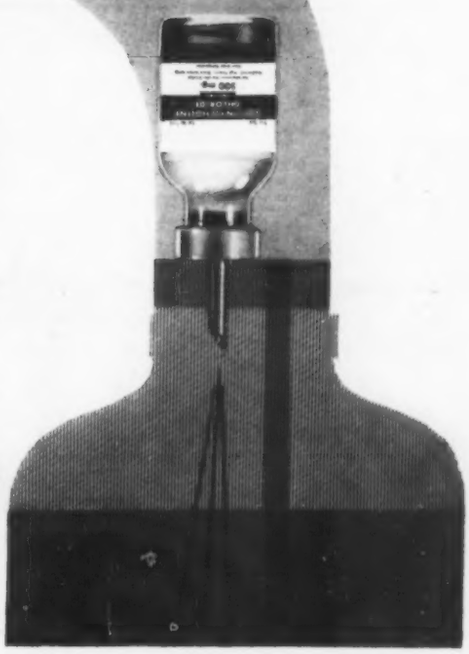

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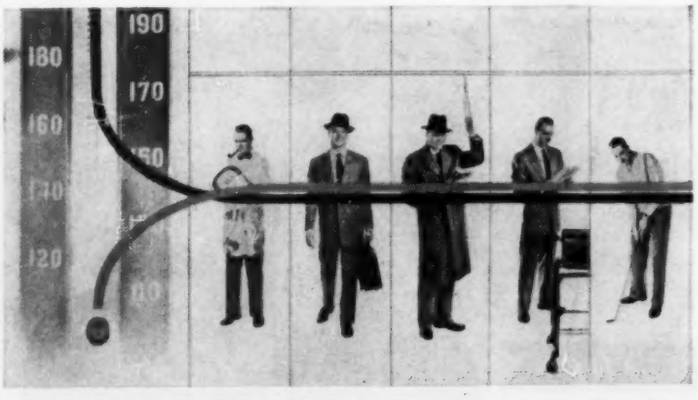


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**References:**
1. Sturgis, C. C., et al.: Advances in Internal Medicine, J. Michigan M. Soc. *55*:154 (Feb.) 1956.
2. Moyer, J. H., et al.: Drug Therapy of Hypertension: Preliminary Observations on the Clinical Use of Mecamylamine (A Ganglionic Blocking Agent) in Combination with Rauwolfia for the Treatment of Hypertension, Med. Rec. & Ann. *49*:390 (Sept.) 1955.

†In this clinical trial all patients were given, in addition to one of the ganglionic blocking agents, a constant daily amount of reserpine.

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(Continued from page 92)

## PRACTICES FOR SALE

CALIFORNIA — GENERAL PRACTICE; EXCELLENTly located 4 room office in one of the fastest growing communities in U. S. A.; 55,000 population at present; close to beaches and mountains; gross excess of $30,000 yearly; immediate possession; $5000 cash includes equipment; will introduce. Franz Pohl, MD, 106 N. Claudina Street, Anaheim, California. P

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MAINE—VERY GOOD GENERAL PRACTICE TO TAKE over; leaving State; any reasonable offer accepted; hurry. Box 1911 P, % AMA.

MICHIGAN—ALLERGY PRACTICE LOCATED IN MIDwestern city of 190,000; gross income of $50,000 annually; physician retiring because of ill health. Box 1909 P, % AMA.

**MISSISSIPPI — WELL-ESTABLISHED GENERAL practice for sale; in beautiful historical town of 30,000; ideal for one who is interested in surgery. Box 1819 P, % AMA.**

NEW JERSEY—ESTABLISHED PEDIATRIC PRACtice; drawing from 6 adjacent communities; suburb of Elizabeth and Newark; good hospitals; reasonable; price includes equipment and practice. Box 1905 P, % AMA.

NEW JERSEY—INDUSTRIAL TOWN 30 MILES FROM New York; combination home and fully equipped office; doctors badly needed; good hospitals available; retiring because of health. Box 1800 P, % AMA.

NEW YORK—UNOPPOSED ACTIVE GENERAL practice in rich farming country near Finger Lakes; hospital connection open (4 miles); attractive, modern ranch-type home (cinderblock), 3 bedrooms, new 2 car garage annex and 7 room office on Main Street, built 5 years ago; school physician and health officer; home and office completely furnished; wonderful buy at $29,000; can be financed, $10,000 cash will handle; no other offers; reason for sale: retirement. Box 1894 P, % AMA.

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OHIO—ESTABLISHED GENERAL PRACTICE; COUNty seat central Ohio; 2 open staff modern hospitals; price reasonable; includes drugs, instruments, equipment, practice etc.; no real estate; retiring. Box 1837 P, % AMA.

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(Continued on page 106)


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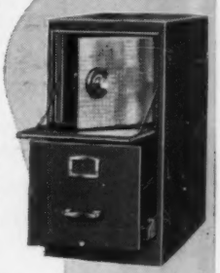

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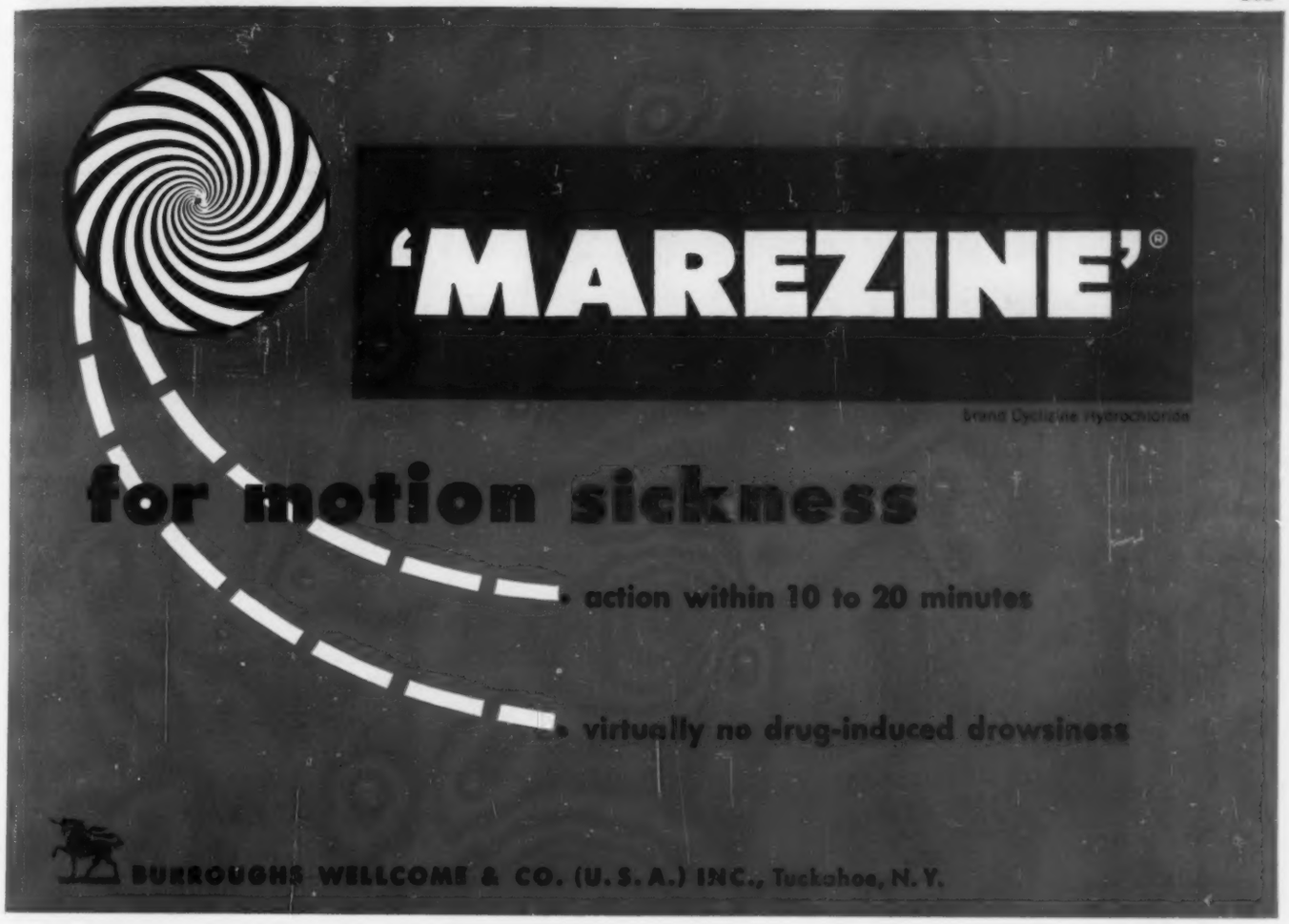
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action within 10 to 20 minutes
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# "Facts about food fats"

This professional discussion concerns itself with recent information about the following subjects:

*Fats and atherosclerosis / Factors in the etiology of atherosclerosis / Food fat and body fat / Fats in the diet; their relationship to calories, proteins, vitamins, satiety, absorption of meals, normal levels, reducing diets, therapeutic diets / Metabolism of fats; the metabolic pool / Reducing diets and complete diet / Digestibility and nutritional values of the principal food fats*

*Annotated with references in recent scientific and clinical literature.*

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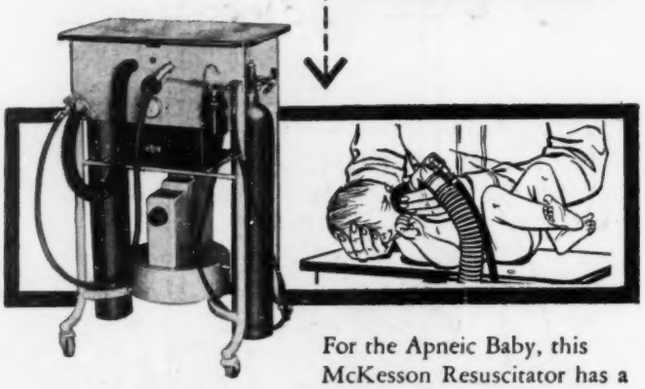

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*"Actually I lost my voice two weeks ago, but my husband wouldn't let me come over to see you till now."*

# You Missed This Exhibit...

## *if you didn't attend the AMA convention*

Perhaps you weren't able to get to the Chicago convention in June. Or perhaps you did attend the convention, but didn't have a chance to stop for a close look at the AMERICAN DRUGGIST exhibit.

That's why we're showing you, in the photo above, the special fixture that was featured at the exhibit. The fixture houses a "New Rx Products" section — of the kind that AMERICAN DRUGGIST is now urging every retail pharmacist to set up in his prescription department.

**Purpose of the section:** To make your day-to-day job easier by enabling you to see . . . and examine . . . the new drugs that are available for your consideration — locally.

On the desk of the fixture, you'll notice an open box of file cards. These are "AMERICAN DRUGGIST *Fact Cards.*"

AMERICAN DRUGGIST is advising every pharmacist to maintain, in conjunction with his "New Rx Products" section, a file of these cards — especially designed to give the busy physician the essential facts he needs to know about the very newest prescription items. Each card can be read in less than a minute-and-a-half.

Next time you visit a retail pharmacy, ask the pharmacist to show you his "New Rx Products" section as well as his file of "AMERICAN DRUGGIST *Fact Cards.*"

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(Continued from page 102)


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"Free from harm or irritation to the vaginal and cervical mucosa."
Karnaky, K. J.: Western Journal of Surgery, Obstetrics and Gynecology, Vol. 51, pp. 150-152.

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Thornton, M. J.: American Journal of Obstetrics and Gynecology, Vol. 46, pp. 259-265.

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Dickinson, R. L.: The Journal of the American Medical Association, Vol. 128, pp. 490-494.

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Sackren, H. S.: Clinical Medicine, Vol. 46, pp. 327-329.

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**LARGE STOCK NEW, USED EQUIPMENT; INSTRUments; available for physician, hospital, or laboratories. Harry Wells, 400 E. 59th St., New York 22, New York.**

### BOOKS WANTED AND FOR SALE

PHYSICIAN—IS HIGHLY DESIROUS OF OBTAINING the following issues of THE JOURNAL AMA: April 21, 1906, March 7, 1908, March 6, 1909, April 9, 1910; amount agreeable to both parties will be paid. Write: Dr. S. D. Anderson, 4 South Genesee St., Waukegan, Illinois. R

### FOR RENT

TWO AND ONE HALF ROOM OFFICE SUITE—CHIcago, Illinois; at 2100 W. 35th St., northwest corner Archer-Hoyne; above Rx pharmacy; available now; $90 per month. Earl M. Friesenecker, LA 3-4413. T

PHYSICIANS OFFICE SPACE—GROUND FLOOR; rent reasonable; at 660 Pearson St., Des Plaines, Illinois; desirable location. Phone: Vanderbilt 4-1917. T

FULLY EQUIPPED DERMATOLOGIST OFFICE available— for morning or afternoon hours; ideal also for surgeon or neurologist; located Chicago Loop. Box 1883 T, % AMA.

FOUR AND ONE HALF ROOM NEW MODERN OFFICE with lab—ground floor brick; west surburban Chicago residential area; excellent hospitals; also new equipment for sale. Box 1827 T, % AMA.

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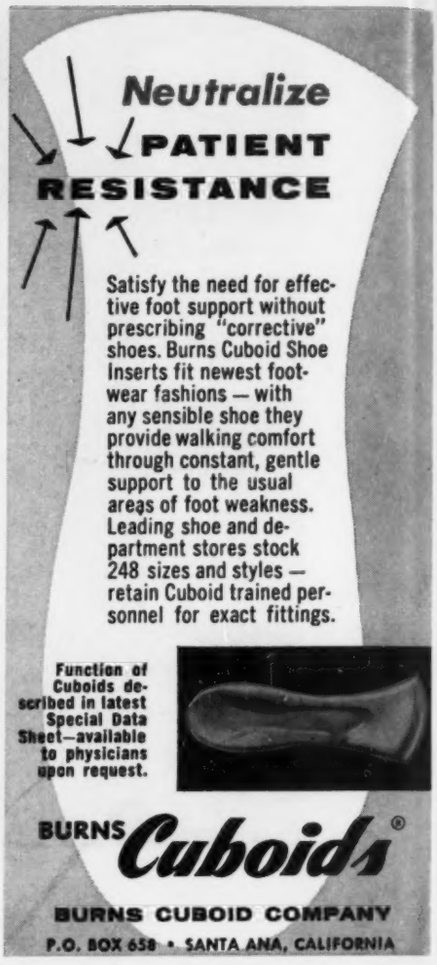
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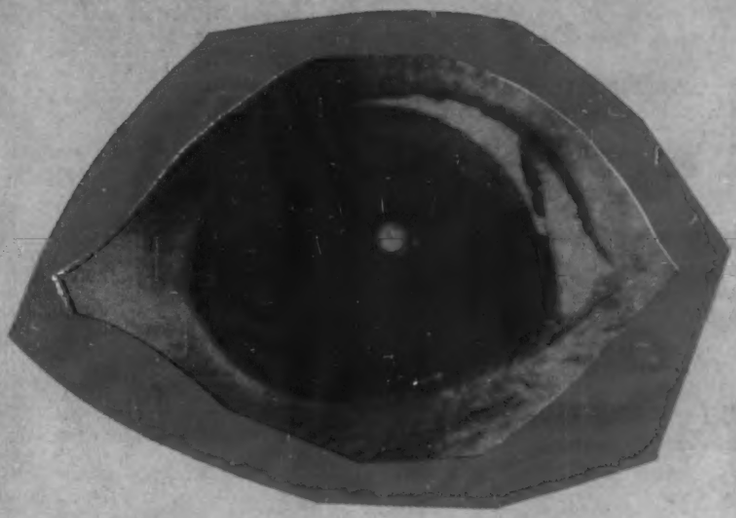

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The 10th A.M.A. Clinical Meeting in Seattle will feature a related, balanced program of lectures and clinical conferences. Attention will be focused upon the diseases and conditions most frequently met by the General Practitioner.

Registration will begin at 8:30 a.m., Tuesday, November 27. The meeting will close each evening at 5:30 p.m., and Friday, November 30, at noon. Major emphasis will be on Obstetrics, Fractures, Heart Disease, and Psychiatry. Other topics will be: Arthritis, Dermatology, Gastro-Intestinal Diseases, Neurology, Gynecology, Pediatrics, Pulmonary Diseases, Surgery.

An important part of the meeting will be the Scientific Exhibits, which provide an opportunity to see at first hand the new techniques and treatments. The latest in efficient equipment for the General Practitioner will be shown by America's leading firms in the Technical Exhibits.

Plan now to attend this meeting in the beautiful Northwest.

*come to the valuable*

# 10th A. M. A.
# *CLINICAL MEETING*
# *SEATTLE—NOV. 27-30*

## *schedules of rates* *(subject to change without notice)*

| No. on Map | Hotels | Singles | Doubles | Twins | Suites |
|---|---|---|---|---|---|
| 1 | Benjamin Franklin | $7.00-9.00 | $10.50-12.50 | $11.50-16.50 | $22.00-35.00 |
| 4 | Camlin Hotel | 9.00 | 12.00 | 12.00-14.00 | ..... |
| 5 | Claremont Apt. Hotel | 6.00-7.00 | 7.00- 8.00 | 8.00-10.00 | ..... |
| 7 | Earl Hotel | 4.50-5.00 | 6.00- 6.50 | 7.00 | ..... |
| 8 | Edmond Meany | 6.00 | 9.00 | 10.50 | 20.00 |
| 9 | Exeter Apt. Hotel | 7.00 | 9.00 | 11.00 | ..... |
| 11 | Hungerford | 5.50 | 8.00 | 14.00 | 17.00 |
| 12 | Mayflower | 6.00-7.00 | 8.00-10.00 | 9.00-10.00 | 18.00-22.00 |
| 15 | New Washington | 6.00-up | 8.00-up | 9.50-up | 16.00-up |
| 16 | Olympic Hotel | 7.00-15.00 | 9.50-18.50 | 12.00-18.50 | 23.00-35.00 |
| 18 | Roosevelt Hotel | 5.50-6.50 | 7.50- 8.50 | 9.50-11.00 | 13.00 |
| 20 | Spring Apt. Hotel | 8.50 | 10.50 | 12.50 | 17.00 |
| 21 | Stewart | 5.00-6.00 | 6.50- 8.00 | 10.00 | ..... |
| 22 | Stratford Hotel | 5.00 | 6.50 | 7.50 | ..... |
| 24 | Vance | 5.25-6.25 | 7.00- 9.00 | 8.50-10.00 | ..... |
| 27 | Windsor | 6.00-8.00 | 8.00-10.00 | 9.00-12.00 | 14.00 |

## MEMBER PHYSICIAN'S ADVANCE REGISTRATION CARD

Please fill out this coupon in full and return it before Nov. 9, 1956 to the American Medical Association, 535 N. Dearborn St., Chicago 10, Illinois, and receive your registration identification card for the Seattle convention.

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*(Please print your name)*

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I do hereby declare that I am a Member of the.....State Medical Association

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*(Every physician must register in his own name)*

All reservations for Seattle hotels listed should be cleared through the A.M.A. Subcommittee on Hotels before November 15, 1956. Use the form below and mark your calendar so that you'll be in Seattle November 27 through November 30, 1956. By taking a few moments now, you will assure yourself of a hotel reservation and save much time at the registration window. Those who register now will receive an admission card by mail.

*make your hotel reservations now!*

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**Seattle, Wash.**

## APPLICATION FOR HOTEL ACCOMMODATIONS FOR A.M.A. CLINICAL MEETING

**Be sure to give four choices of hotels**
(Please print or type)

Please reserve the following:

Hotel..... First Choice

Hotel..... Second Choice

Hotel..... Third Choice

Hotel..... Fourth Choice

.....Room(s) with bath for.....person(s). Rate $.....to $.....per room.
.....Room(s) with double bed for.....person(s). Rate $.....to $.....per room.
.....Room(s) with twin beds for.....person(s). Rate $.....to $.....per room.
.....Suite (parlor and bedroom) for.....person(s). Rate $.....

Date Arriving Seattle.....hour.....A.M. P.M. Leaving.....

**Rooms will be occupied by:** *(Please attach list of additional names if you do not have sufficient space here. Also list ages of children, if any.) Print or type*

| Name | Street Address | City | Zone | State |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

**If you are a technical exhibitor, be sure to give name of firm and individuals to occupy room or rooms reserved.**

*Name*.....

*Mailing Address*.....

*City*.....*Zone*.....*State*.....

# The Bright Side

## by E. K. H.

Comedian Joe Frisco, who has made several fortunes during his years as an entertainer, lost a lot of money on the horses.

"You shouldn't throw your dough away like that," a friend once told him. "Put away a couple of hundred bucks every week and, before you know it, you'll have $50,000. Believe me, that money will come in handy if there's ever a depression."

"But what if there's no depression?" retorted Frisco. "There I am . . . *stuck* with $50,000!"

❖

Garry Moore relays the one about the gatekeeper in Heaven who asked a new arrival where he was from.

"Why, bless your saintly heart, suh—I'm from Texas."

The gatekeeper's face fell. "Well," he said "come in—but you aren't going to like it."

❖

The train engineer jumped out of bed and ran over to the clock. Sure enough, the alarm had failed to go off.

He rushed to the shower and slipped on the tile, giving his ankle a nasty twist. He started to shave—and cut himself. He put on his shoes—and noticed that he had on one blue and one brown sock. It was too late to change, so he raced to the station yard and jumped into the cab of his locomotive.

He pulled the throttle and the train took off.

Just as he was catching his breath, he saw another train coming toward him at breakneck speed AND ON THE SAME TRACK. Shaking his head, he turned to the fireman sitting beside him.

"Joe," he said disgustedly, "did you ever have one of those days when everything seemed to go wrong?"

❖

Jim Weber, Sr., owner of Virgin Island's popular "St. Croix By the Sea," tells the story of two fellow-travelers who ran into each other. "Where are you going with the suitcase?" asked Igor.

"I'm going to Russia," answered Boris. "It's wonderful there. You can get anything you want—wine, women—anything! Why don't you come with me?"

"Sounds great. If it's that good, write me and I'll come, too."

"But how can I write you the truth if it's bad?" asked Boris. "The Russians will kill me."

"Well, if it's bad, write me in red ink."

After many weeks, Igor received this letter: "It's wonderful! You can get anything you want here—vodka, caviar, beautiful women . . . in fact, you can get everything but red ink."

❖

A woman called a Mount Vernon, New York, telephone operator and asked for Nepperhand 0778.

"Nepperhand is obsolete," the operator reported.

"Thank you," returned the woman. "Then give me Obsolete 0778."

From Dave Garroway: A traveling salesman asked a farmer if he could put him up for the night. "Sure," said the farmer, "there's a guest room on the third floor."

"Goodness," gasped the salesman. "I'm in the wrong joke."

❖

Overheard by columnist-songwriter Nick Kenny in the next booth at a New York restaurant:

"Just because it's our anniversary, does that mean you have to order a la carte?"

❖

A cotton goods salesman, stuck in a small village in the Ozarks, was seized with a severe toothache. In desperation, he rushed to the only dentist in town.

"I'm afraid you're gonna have to lose that tooth," the dentist drawled and, pulling out some tools, he went to work. Suddenly the patient yelped.

"Hey, Doc! You pulled the wrong tooth!"

"Easy, son," soothed the doctor. "I'm coming to it!"

❖

On NBC's TV quiz show, "Name That Tune," emcee Red Benson asked a sailor whether he liked blondes, brunettes or redheads.

Answered the sailor, "Yes."

❖

Herb Stein relays a tale about the small fry who accidentally got into the casino room at a hotel in Las Vegas and put a dime into a slot machine. The boy hit the jackpot, and after all the coins had fallen, he started to kick the machine.

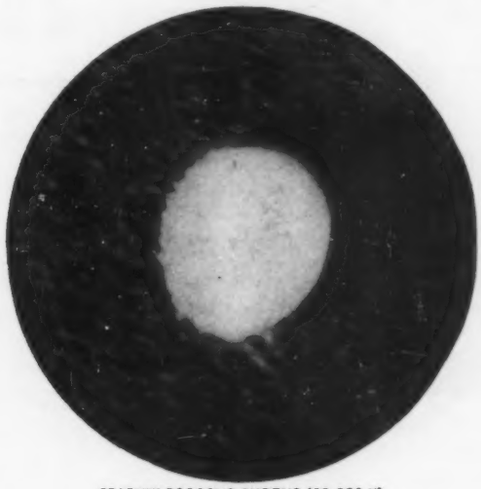
An attendant rushed over angrily and snapped, "Beat it, son—you're too young to be gambling, anyway."

"I don't care," shouted the little boy, still kicking. "I'm not going until I get my candy bar!"

*"Which do you prefer . . . the king size or the regular?"*

PROTEUS VULGARIS (9200 X)

*Most effective where the broad spectrums most often fail*



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Other significant Albamycin advantages: it produces high and prolonged blood levels on oral dosage, and no monilial superinfection or perianal pruritus has been reported to date.

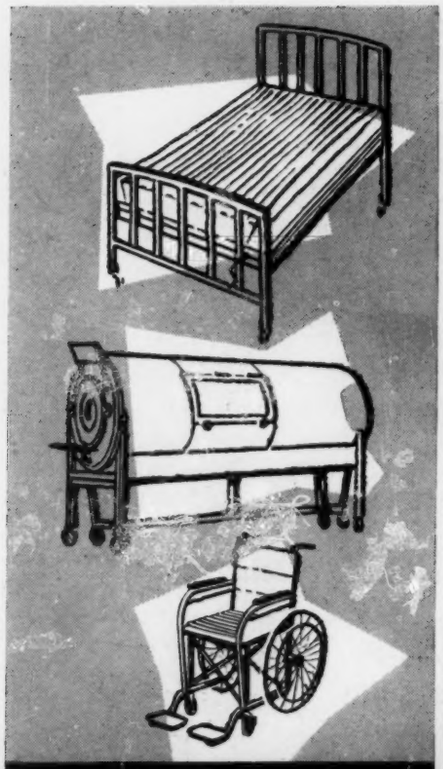
DOSAGE: The recommended dose in adults is 1 capsule (250 mg.) every six hours or 2 capsules (500 mg.) every twelve hours, continued for at least forty-eight hours after the temperature has returned to normal and all evidence of infection has disappeared. In severe or unusually resistant infections, 0.5 Gm. every six hours or 1 Gm. every twelve hours may be employed.

The dose for children on similar schedules is 15 mg. per kilogram of body weight per day for moderately acute infections, and it may be increased to 30 to 45 mg. per kilogram of body weight per day for severe infections.

AVAILABLE: 250 mg. capsules in bottles of 16.

*TRADEMARK, REG. U.S. PAT. OFF.

The Upjohn Company **Upjohn** Kalamazoo, Michigan



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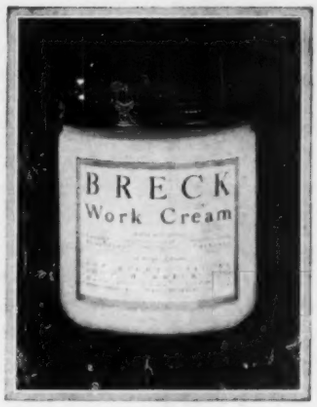


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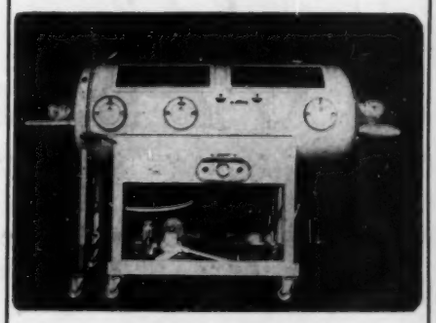

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1. Moser, M.: New York State J. Med. **55**:1999 (July 15) 1955. 2. Agrest, A., and Hoobler, S.W.: J.A.M.A. **157**:999 (March 19) 1955. 3. Smirk, F.H.: Am. J. Med. **17**:839 (Dec.) 1954. 4. Smirk, F.H., and McQueen, E.G.: J. Chron. Dis. **1**:516 (May) 1955. 5. Waldman, S., and Pelner, L.: Am. J. M. Sc. **231**:140 (Feb.) 1956.

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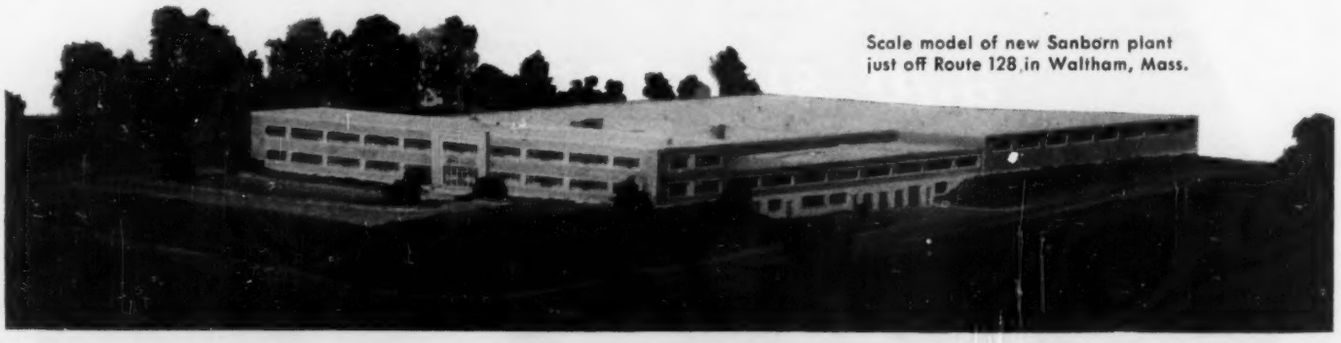

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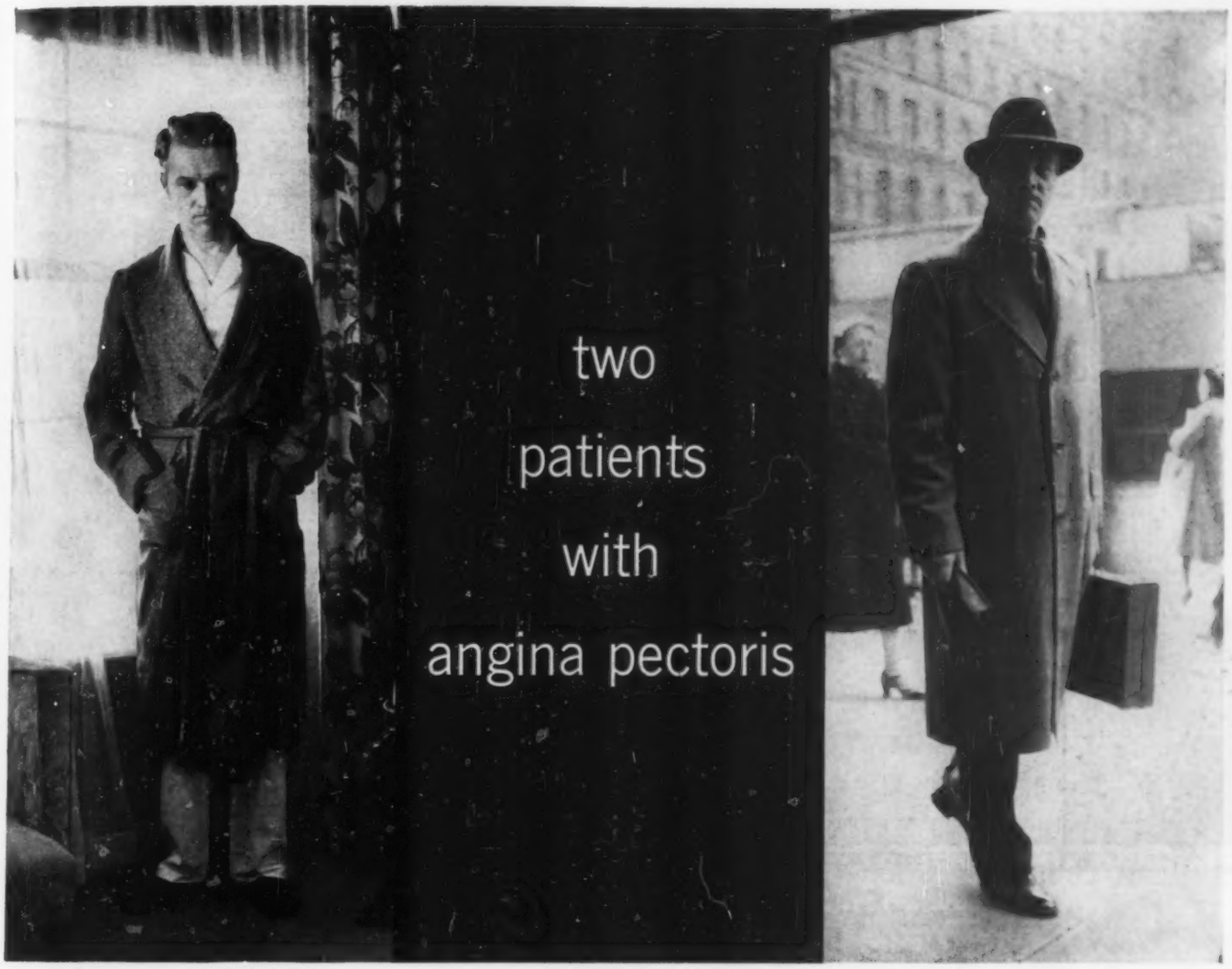


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*References:* 1. Rosenberg, H. N., and Michelson, A. L.: Am. J. M. Sc. *230*:254 (Sept.) 1955. 2. Kory, R. C., *et al.*: Am. Heart J. *50*:308 (Aug.) 1955. 3. Winsor, T., and Humphreys, P.: Angiology *3*:1 (Feb.) 1953. 4. Plotz, M.: New York State J. Med. *52*:2012 (Aug. 15) 1952. 5. Dailheu-Geoffroy, P.: L'Ouest-Médical, vol. 3 (July) 1950.

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TABLE I. COMPARISON OF COMMERCIAL NEBULIZERS

| No. | Model | Number Tested | Mg. in One Puff | Capacity of Bulb c.c. | Seconds to Nebulize 1 c.c. $H_2O$ | | Radius of Particles (Microns)** | | Droplets |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | $O_2$ at 8 l/min. | Comp. Air | Median | Largest | |
| 1 | Breatheasy | 2 | 13.0 | 76 | 35 | 31 | 15 | 175 | 0 |
| | Breatheasy No. 2 | | 7.9 | 49 | 31 | 30 | 19 | 250 | 0 |
| | No. 1 with L-tube | 1 | 7.2 | | 72 | 68 | 13 | 78 | 0 |
| | No. 1 with carburetor closed | 1 | 3.0 | | 182 | 155 | | | 0 |

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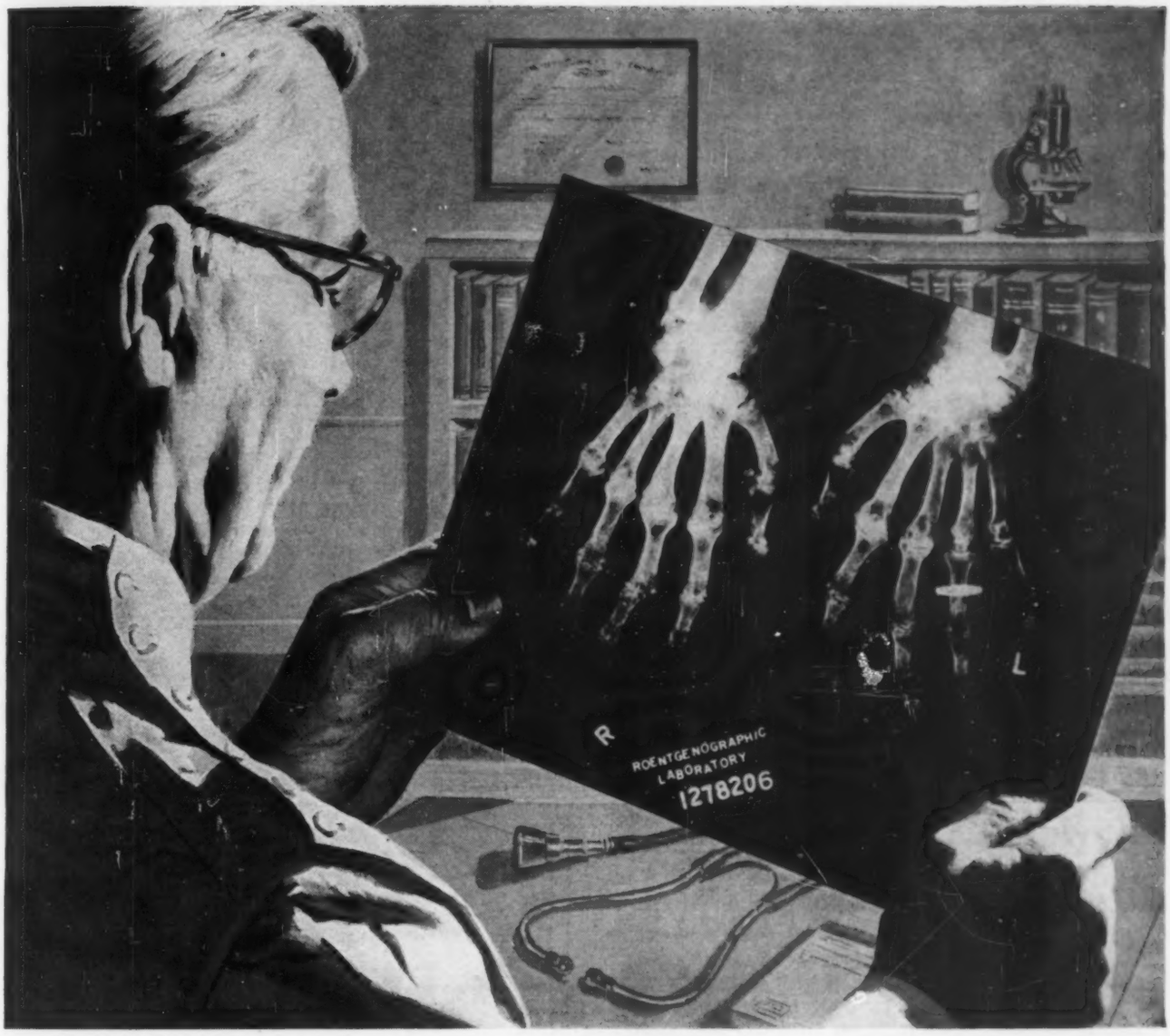


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1. J.A.M.A. 159:645 (Oct. 15) 1955.
2. J.A.M.A. 158:386 (June 4) 1955.

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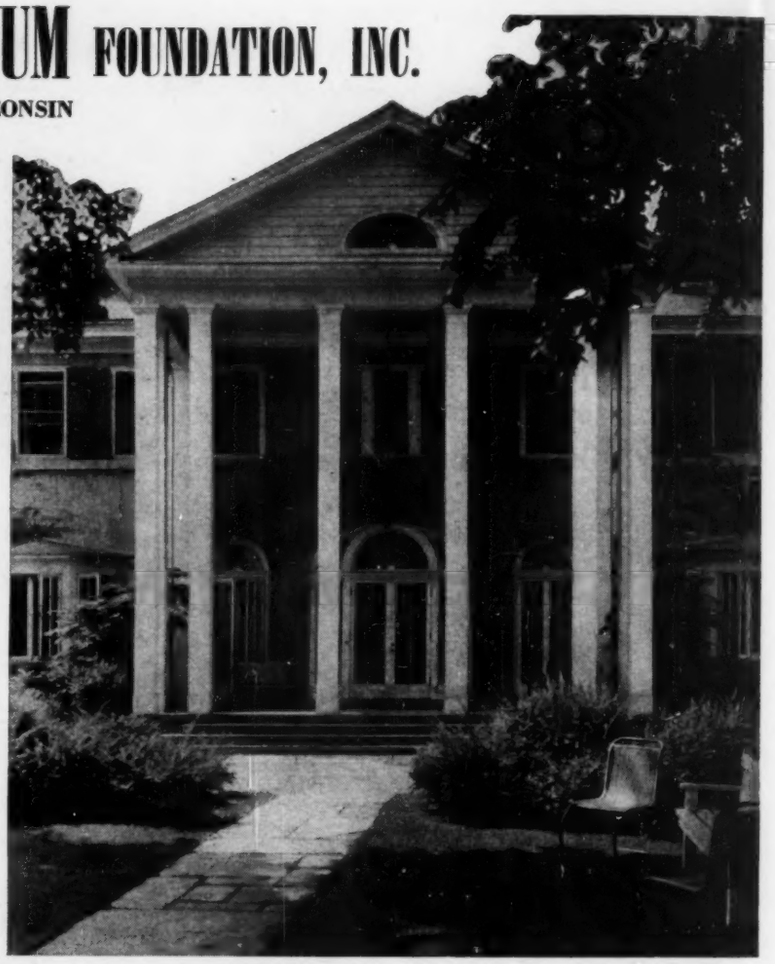

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—during the fellowship program in Rochester, all fellows are enrolled as graduate students in the University of Minnesota, and may be candidates for the M. S. or Ph. D. degrees in clinical or basic science fields

—approved three-year fellowships (and four-years in General Surgery and Neurosurgery) with stipend are offered in the following fields:

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DENTISTRY
DERMATOLOGY AND SYPHILOLOGY
INTERNAL MEDICINE
NEUROLOGIC SURGERY
NEUROLOGY
OBSTETRICS AND GYNECOLOGY
OPHTHALMOLOGY
ORTHOPEDIC SURGERY
OTOLARYNGOLOGY AND RHINOLOGY
PATHOLOGY
PEDIATRICS
PHYSICAL MEDICINE AND REHABILITATION
PLASTIC SURGERY
PROCTOLOGY
PSYCHIATRY
RADIOLOGY
SURGERY, GENERAL
UROLOGY

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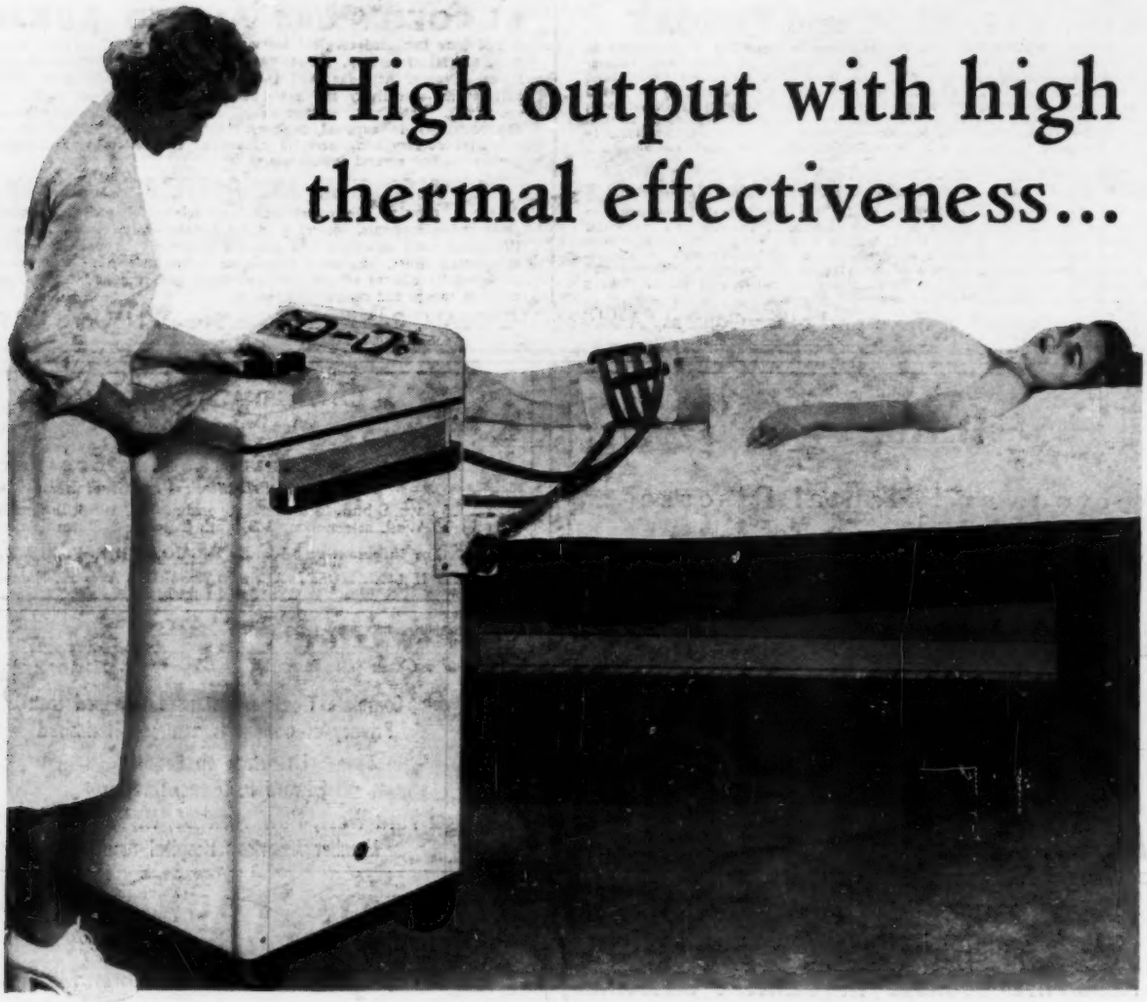

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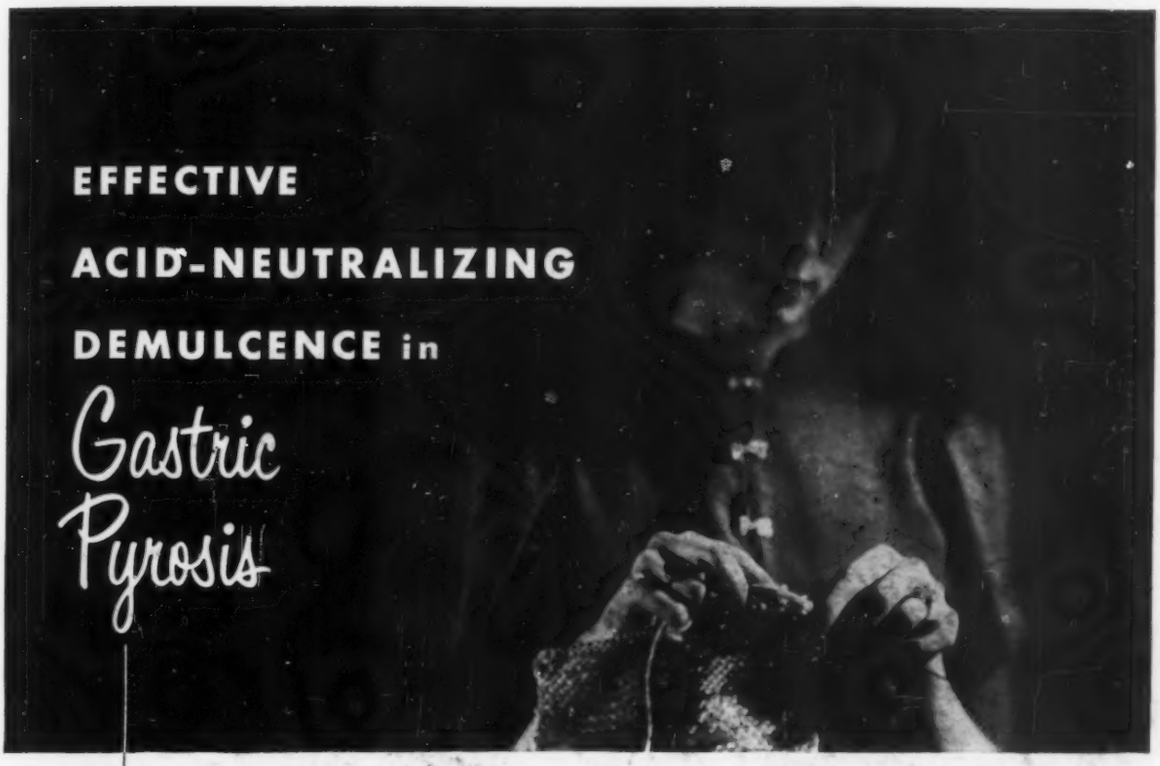

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